

1957-1958

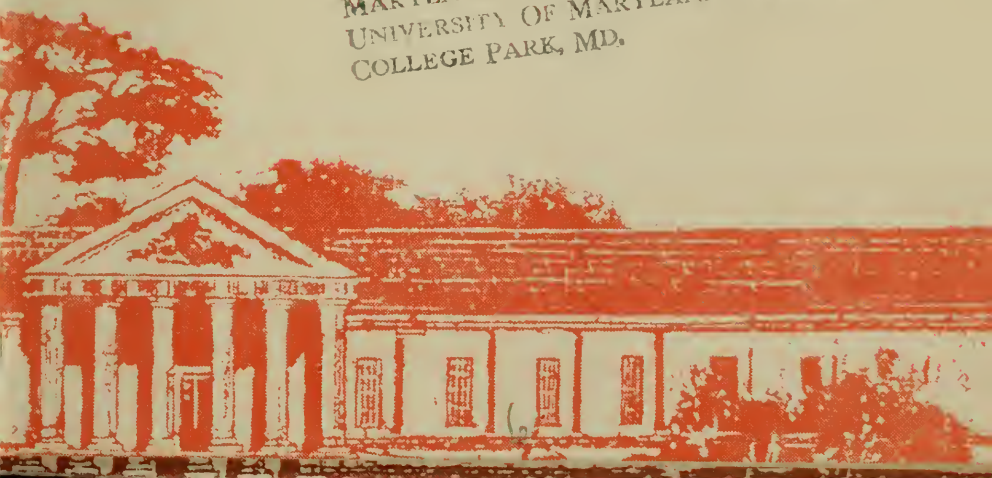
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UNIVERSITY OF MARYLAND

general information

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IMPORTANT

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VOLUME 9

APRIL 10, 1957

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**BOARD OF REGENTS
AND
MARYLAND STATE BOARD OF AGRICULTURE**

	<i>Term Expires</i>
CHARLES P. MCCORMICK, SR., Chairman, McCormick and Company, Inc., 414 Light Street, Baltimore 2	1957
EDWARD F. HOLTER, Vice-Chairman, The National Grange, 744 Jackson Place, N.W., Washington 6	1959
B. HERBERT BROWN, Secretary, The Baltimore Institute, 12 West Madison Street, Baltimore 1	1960
HARRY H. NUTTLE, Treasurer, Denton	1957
LOUIS L. KAPLAN, Assistant Secretary, 1201 Eutaw Place, Baltimore 17	1961
EDMUND S. BURKE, Assistant Treasurer, Kelly-Springfield Tire Com- pany, Cumberland	1959
WILLIAM P. COLE, JR., 100 West University Parkway, Baltimore 10	1958
THOMAS W. PANGBORN, The Pangborn Corporation, Pangborn Blvd., Hagerstown	1965
ENOS S. STOCKBRIDGE, 10 Light Street, Baltimore 2	1960
THOMAS B. SYMONS, Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	1963
C. EWING TUTTLE, 907 Latrobe Building, Charles and Read Streets, Baltimore 2	1962

Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

A regular meeting of the Board is held the last Friday in each month, except during the months of July and August.

OFFICERS OF THE ADMINISTRATION

WILSON H. ELKINS, President, University of Maryland.

B.A., University of Texas, 1932; M.A., 1932; B.Litt., Oxford University, 1936; D.Phil., 1936.

ALBIN O. KUHN, Assistant to the President of the University.

B.S., University of Maryland, 1938; M.S., 1939; Ph.D., 1948.

ALVIN E. CORMENY, Assistant to the President, in charge of Endowment and Development.

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

HARRY C. BYRD, President Emeritus, University of Maryland.

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.Sc., Western Maryland College, 1938.

HAROLD F. COTTERMAN, Dean of the Faculty of the University.

B.S., Ohio State University, 1916; M.A. Columbia University, 1917; Ph.D., American University, 1930.

RONALD BAMFORD, Dean of the Graduate School.

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; Ph.D., Columbia University, 1931.

GORDON M. CAIRNS, Dean of Agriculture.

B.S., Cornell University, 1936; M.S., 1938; Ph.D., 1940.

PAUL E. NYSTROM, Director, Agricultural Extension Service.

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

IRVIN C. HAUT, Director, Agricultural Experiment Station and Head, Department of Horticulture.

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.

LEON P. SMITH, Dean of the College of Arts and Sciences.

B.A., Emory University, 1919; M.A., University of Chicago, 1928; Ph.D., 1930; Diplôme de l'Institut de Touraine, 1932.

J. FREEMAN PYLE, Dean of the College of Business and Public Administration.

Ph.B., University of Chicago, 1917; M.A., 1918; Ph.D., 1925.

MYRON S. AISENBERG, Dean of the School of Dentistry.

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, Dean of the College of Education.

B.S., University of Minnesota, 1930; M.A., 1936; Ph.D., University of Colorado, 1942.

***S. SIDNEY STEINBERG**, Dean of the College of Engineering.

B.E., Cooper Union School of Engineering, 1910; C.E., 1913; Registered Professional Engineer.

WILBERT J. HUFF, Director, Engineering Experiment Station and Chairman of the Division of Physical Sciences.

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; Ph.D., Yale University, 1917; D.Sc. (hon.), Ohio Northern University, 1927.

M. MARIE MOUNT, Dean of the College of Home Economics.

B.A., University of Indiana, 1916; M.A., Columbia Teachers College, 1924.

ROGER HOWELL, Dean of the School of Law.

B.A., Johns Hopkins University, 1914; Ph.D., 1917; LL.B., University of Maryland, 1917.

WILLIAM S. STONE, Dean of the School of Medicine and Director of Medical Education and Research.

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; Ph.D., (hon.), University of Louisville, 1946.

FLORENCE M. GIPE, Dean of the School of Nursing.

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; Ed.D., University of Maryland, 1952.

CLIFFORD G. BLITCH, Director of the University Hospital.

M.D., Vanderbilt University Medical School, 1928.

*Resigned January 31, 1957.

- EDWARD BARBER**, Dean of the College of Military Science.
B.S., Massachusetts Institute of Technology, 1935; M.A., Georgetown University, 1956; Brigadier General, U.S. Air Force.
- NOEL E. FOSS**, Dean of the School of Pharmacy.
Ph.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; Ph.D., 1933.
- LESTER M. FRALEY**, Dean of the College of Physical Education, Recreation, and Health.
B.A., Randolph-Macon College, 1928; M.A., 1937; Ph.D., Peabody College, 1939.
- RAY W. EHRENSBERGER**, Dean of the College of Special and Continuation Studies.
B.A., Wabash College, 1929; M.A., Butler University, 1930; Ph.D., Syracuse University, 1937.
- GEARY F. EPPLEY**, Director of Student Welfare and Dean of Men.
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- ADELE H. STAMP**, Dean of Women.
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.
- G. WATSON ALGIRE**, Director of Admissions and Registrations.
B.A., University of Maryland, 1930; M.S., 1931.
- NORMA J. AZLEIN**, Registrar.
B.A., University of Chicago, 1940.
- DAVID L. BRIGHAM**, Alumni Secretary.
B.A., University of Maryland, 1938.
- WILLIAM W. COBEY**, Director of Athletics.
A.B., University of Maryland, 1930.
- GEORGE O. WEBER**, Director and Supervising Engineer, Department of Physical Plant.
B.S., University of Maryland, 1933.
- GEORGE W. MORRISON**, Associate Director and Supervising Engineering Physical Plant. (Baltimore).
B.S., University of Maryland, 1927; E.E., 1931.
- C. WILBUR CISSEL**, Director of Finance and Business.
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
- HOWARD ROVELSTAD**, Director of Libraries.
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.
- GEORGE W. FOGG**, Director of Personnel.
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MCCARTNEY**, Director of University Relations.
B.A., University of Massachusetts, 1941.
- HARRY A. BISHOP**, Director of the Student Health Service.
M.D., University of Maryland, 1912.
- ROBERT E. KENDIG**, Professor of Air Science and Commandant of Cadets, Air Force R.O.T.C.
A.B., William and Mary College, 1939.

DIVISION CHAIRMEN

- CHARLES E. WHITE**, Chairman of the Lower Division.
B.S., University of Maryland, 1923; M.S., 1924; Ph.D., 1926.
- JOHN E. FABER, JR.**, Chairman of the Division of Biological Sciences.
B.S., University of Maryland, 1926; M.S., 1927; Ph.D., 1937.
- ADOLF E. ZUCKER**, Chairman of the Division of Humanities.
B.A., University of Illinois, 1912; M.A., 1913; Ph.D., University of Pennsylvania, 1917.
- HAROLD C. HOF SOMMER**, Chairman of the Division of Social Sciences.
B.S., Northwestern University, 1921; M.A., 1923; Ph.D., Cornell University, 1929.

FACULTY COMMITTEES

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Chairman; RUSSELL B. ALLEN, Professor of Civil Engineering

Committee on Admissions

Chairman; CHARLES MANNING, Associate Professor of English

Committee on Instructional Procedures

Chairman; R. LEE HORNBACE, Professor of Industrial Education

Committee on Scheduling and Registration

Chairman; CHARLES E. WHITE, Professor of Chemistry

Committee on Programs, Curricula and Courses

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Chairman; HAROLD F. COTTERMAN, Dean of the Faculty

Committee on Faculty Research

Chairman; JOHN S. TOLL, Professor of Physics

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Chairman; LEON P. SMITH, Dean, College of Arts and Sciences

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Committee on Student Publications and Communications

Chairman; JOHN H. FREDERICK, Professor of Business Organization

Committee on Student Discipline

Chairman; GEORGE W. WHARTON, Professor of Zoology

Religious Life Committee

Chairman; WESLEY M. GEWEHR, Professor of History

Committee on Student Health and Welfare

Chairman; BENJAMIN H. MASSEY, Professor of Physical Education

Committee on Student Employment and Self-Help

Chairman; STANLEY B. JACKSON, Professor of Mathematics

Committee on Intercollegiate Competition

Chairman; IRVIN C. HAUT, Director of the Agricultural Experiment Sta.

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Committee on Appointments, Promotions and Salaries

Chairman; MONROE H. MARTIN, Professor of Mathematics

Committee on Faculty Life and Welfare

Chairman; HOMER ULRICH, Professor of Music

Committee on Membership and Representation

Chairman; RUSSELL R. RENO, Professor of Law

1957-58 CALENDAR

First Semester

1957

September 17-20
September 23
November 27
December 2
December 21

Tuesday-Friday
Monday
Wednesday after last class
Monday, 8 A.M.
Saturday after last class

Registration, first semester
Instruction begins
Thanksgiving recess begins
Thanksgiving recess ends
Christmas recess begins

1958

January 6
January 20
January 21
January 22-29

Monday, 8 A.M.
Monday
Tuesday
Wednesday-Wednesday, inc.

Christmas recess ends
Charter Day
Pre-Examination Study Day
First Semester examinations

Second Semester

February 4-7
February 10
February 22
March 25
April 3
April 8
May 15
May 28
May 29-June 6
May 30
June 1
June 7

Tuesday-Friday
Monday
Saturday
Tuesday
Thursday after last class
Tuesday, 8 A.M.
Thursday
Wednesday
Thursday-Friday, inc.
Friday
Sunday
Saturday

Registration, second semester
Instruction begins
Washington's birthday, holiday
Maryland Day
Easter recess begins
Easter recess ends
Military Day
Pre-Examination Study Day
Second Semester examinations
Memorial Day, holiday
Baccalaureate exercises
Commencement exercises

Summer Session, 1958

June 23
June 24
August 1

Monday
Tuesday
Friday

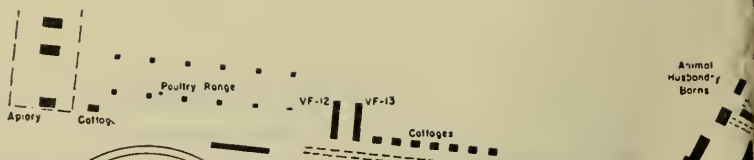
Registration, Summer Session
Summer Session begins
Summer Session ends

Short Courses

June 16-21
August 4-9
September 2-5

Monday-Saturday
Monday-Saturday
Tuesday-Friday

Rural Women's Short Course
4-H Club Week
Firemen's Short Course



Parking Lot "B"

Student Activities Building

Student Union



AXI

Parking Lot "P" (Reserved)

Queen Annes Hall (Dorm.)

Somerset Hall (Dormitory)

Women's Swimming Pool

Tennis Courts

Women's Practice Field

Prankert Field House (W)

Carroll Hall (Dormitory)

Wicomico Hall (Dorm.)

Frederick Journalism

Caroline Hall (Dorm.)

HM - Music Annex

Parking Lot "A"

Dean of Women (DW)

Morrill Hall (M)

BPA Bldg. (Q)

Dining Hall

Garrett Hall (Dorm.)

Music Bldg. (B)

Grounds Shop

Nursery School A.G.

BB

DD

EE

CC

TT

New Journalism

AB S. Bldg. (A)

Geography (N)

Library (L)

Talbot Hall (Dorm.)

Kent Hall (Dorm.)

Calvert Hall (Dorm.)

Prince George (Dorm.)

Baltimore Hall (Dorm.)

Washington Hall (Dorm.)

Frederick Hall (Dorm.)

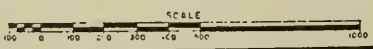
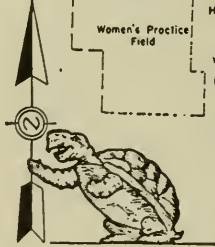
Allegany Hall (Dormitory)

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UNIVERSITY OF MARYLAND



COLLEGE PARK CAMPUS 1957

BUILDING CODE LETTERS FOR CLASS SCHEDULES

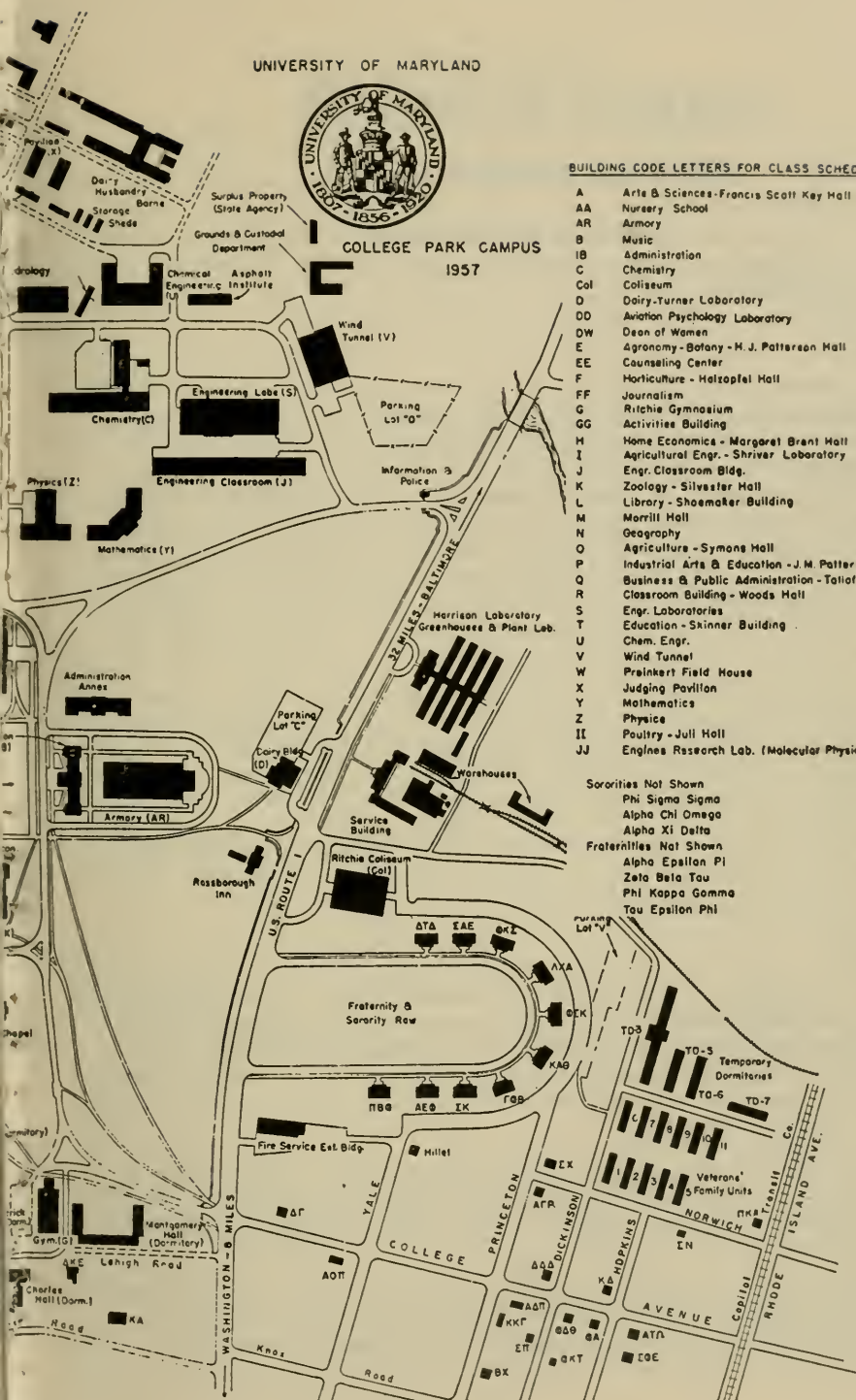
A	Arts & Sciences - Francis Scott Key Hall
AA	Nursery School
AR	Armory
B	Music
IB	Administration
C	Chemistry
Col	Coliseum
D	Dairy - Turner Laboratory
DD	Aviation Psychology Laboratory
DW	Dean of Women
E	Agronomy - Botany - H.J. Patterson Hall
EE	Counseling Center
F	Horticulture - Helzsofel Hall
FF	Journalism
G	Richie Gymnasium
GG	Activities Building
H	Home Economics - Margaret Brent Hall
I	Agricultural Engr. - Shriver Laboratory
J	Engr. Classroom Bldg.
K	Zoology - Sylvester Hall
L	Library - Shoemaker Building
M	Morrill Hall
N	Geography
O	Agriculture - Symons Hall
P	Industrial Arts & Education - J.M. Patterson Bldg.
Q	Business & Public Administration - Tatloferg Hall
R	Classroom Building - Woods Hall
S	Engr. Laboratories
T	Education - Skinner Building
U	Chem. Engr.
V	Wind Tunnel
W	Preinkert Field House
X	Judging Pavilion
Y	Mathematics
Z	Physics
II	Poultry - Jull Hall
JJ	Engines Research Lab. (Molecular Physics)

Sororities Not Shown

Phi Sigma Sigma
Alpha Chi Omega
Alpha Xi Delta

Fraternities Not Shown

Alpha Epsilon Pi
Zeta Beta Tau
Phi Kappa Gamma
Tau Epsilon Phi



UNIVERSITY OF MARYLAND

GENERAL INFORMATION

THE University of Maryland, in addition to being a State University, is the Land-Grant institution of Maryland. The University is co-educational in all of its branches.

College Park

The undergraduate Colleges and the Graduate School of the University of Maryland are located at College Park, Prince George's County, Maryland, on a beautiful tract of rolling, wooded land, less than eight miles from the heart of the Nation's capital, Washington, D. C. This nearness to Washington is of immeasurable advantage to students because of the unusual library facilities afforded by the Library of Congress and the libraries of United States Governmental Departments. Students also have the privilege of observing at close range sessions of the United States Supreme Court, the United States Senate and the House of Representatives and the opportunity of readily obtaining an abundance of factual data which are constantly being assembled by the numerous agencies of the Federal Government.

The University is served by excellent transportation facilities, including the main line of the Baltimore and Ohio Railroad and the Washington transportation system. The campus fronts on the Baltimore-Washington Boulevard, a section of U. S. Route No. 1, at the intersection of Maryland Route 193 and is thus easily accessible by private travel.

College Park and several adjacent residential communities provide homes for many of the members of the faculty and staff. Living accommodations at reasonable rates are available for students who live off campus.

Baltimore

The professional schools of the University—Dentistry, Law, Medicine, Nursing, and Pharmacy; the University Hospital; the Psychiatric Institute; and the Baltimore Program of the College of Special and Continuation Studies—are located in a group of splendid buildings, most of them erected in recent years, at or near the adjacent corners of Lombard, Greene and Redwood Streets, Baltimore, Maryland.

Baltimore, a thriving, modern industrial city of more than a million inhabitants, has an old, established culture represented by outstanding educational institutions, libraries, museums, parks, public buildings, and places of historical interest.

Baltimore is proud of its well earned reputation as a center of the highest type of professional education, and no finer location could be chosen by a young man or woman desiring to prepare for a professional career.

BRIEF HISTORY OF THE UNIVERSITY

While its advancement in recent years, both in the matter of physical plant facilities and educational achievement, has been especially rapid, the University has behind it a long and honorable record.

The history of the present University is the history of two institutions: the old privately-owned and operated University of Maryland in Baltimore, and the Maryland State College (formerly Maryland Agricultural College) at College Park. These institutions were merged in 1920 to form the present University of Maryland.

In 1807 the College of Medicine of Maryland was organized, the fifth medical school in the United States. The first class was graduated in 1810. A permanent home was established in 1814-1815 by the erection of the building at Lombard and Greene Streets in Baltimore. This is the oldest structure in America devoted to medical teaching. Here was founded one of the first medical libraries (and the first medical school library) in the United States. In 1812 the General Assembly of Maryland authorized the College of Medicine of Maryland to "annex or constitute faculties of divinity, law, and arts and sciences," and the same act declared that the "college or faculties thus united should be constituted a university by the name and under the title of the University of Maryland." By authority of this act, steps were taken in 1813 to establish "a faculty of law," and in 1823 a regular school of instruction in law was opened. Subsequently there were added in 1882 a Department of Dentistry, which was absorbed in 1923 by the Baltimore College of Dental Surgery (founded in 1840, the first dental school in the world); in 1889 a School of Nursing; and in 1904 the Maryland College of Pharmacy (founded in 1841, the third oldest pharmacy college in the United States).

The Maryland State College was chartered in 1856 under the name of the Maryland Agricultural College, the second agricultural college in the Western Hemisphere. For three years the College was under private management. In 1862 the Congress of the United States passed the Land Grant Act. This act granted each state and territory that should claim its benefits a proportionate amount of unclaimed western lands, in place of scrip, the proceeds from the sale of which should be applied under certain conditions to the "endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanical arts, in such a manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." This grant was accepted by the General Assembly of Maryland, and the Maryland Agricultural College was named as the beneficiary of the grant. Thus the College became, at least in part, a State institution. In the fall of 1914 control was taken over entirely by the State. In 1916 the General Assembly granted a new charter to the College and made it the Maryland State College.

In 1920, by an act of the State Legislature, the University of Maryland was merged with the Maryland State College, and the resultant institution was given the name University of Maryland.

OBJECTIVES OF THE UNIVERSITY

Briefly summarized, the major objectives of the University of Maryland are (1) to prepare students in the arts, the humanities, the pure and applied sciences, agriculture, business and public administration, home economics, industry, and for the professions; (2) to contribute to the civic, ethical, moral, cultural, spiritual and general welfare; (3) to provide general education in its broadest sense, both formal and informal, for all students who enroll; (4) to develop those ideals and finer relationships among students which characterize cultured individuals; (5) to conduct systematic research and promote creative scholarship; and (6) to offer special, continuation and extension education in communities where feasible.

ADMINISTRATIVE ORGANIZATION OF THE UNIVERSITY

The government of the University is, by law, vested in a Board of Regents, consisting of eleven members appointed by the Governor of Maryland, each for a term of nine years. The administration of the University is vested in the President. The Deans of the Colleges and Schools constitute a committee which serves in an advisory capacity to the President.

Following is a list of the administrative divisions of the University.

At College Park

College of Agriculture	College of Special and Continuation Studies
College of Arts and Sciences	Graduate School
College of Business and Public Administration	Summer School
College of Education	
College of Engineering, The Glenn L. Martin Institute of Technology	Agricultural Experiment Station
College of Home Economics	Agricultural and Home Economics Extension Service
College of Military Science	Agricultural Services and Controls
College of Physical Education, Recreation and Health	

At Baltimore

School of Dentistry	School of Nursing
School of Law	School of Pharmacy
School of Medicine	University Hospital

State-Wide Activities

The Agricultural and Home Economics Extension Service maintains local representatives in every county of the State. These representatives, County Agents and Home Demonstration Agents, provide expert assistance to farmers and farm families in their areas and, when necessary, call upon the large staff of specialists at the headquarters of the Extension Service at College Park.

The Live Stock Sanitary Service, which is charged with responsibility for the control and eradication of diseases of livestock and poultry, maintains local veterinary inspectors throughout the State, in addition to specialists and laboratory technicians at the main laboratory at College Park and the branch laboratories in Salisbury, Centreville and Baltimore.

PHYSICAL FACILITIES—GROUNDS, BUILDINGS, AND EQUIPMENT

College Park

The University owns approximately 2500 acres of land, of which 1115 are at College Park. The main campus, occupying about 300 acres, consists of a tract of rolling land surmounted by a commanding hill. Many of the buildings are located on or near this eminence. The grounds are attractively landscaped with trees and shrubbery. An additional 800 acres at College Park are devoted to research and teaching in horticulture, agronomy, entomology, dairying, livestock, agriculture, and poultry. In addition, there are five large areas in different parts of the State, totaling 1385 acres, which are used for agricultural research.

The buildings have been consistently designed in a Georgian colonial style. There are seventy-five permanent principal buildings and an additional seventy for supplemental utility. Many of the permanent buildings were named in 1954, through action of the Board of Regents and with appropriate ceremonies to honor individuals who have contributed in some way to the growth of the institution. The total evaluation of buildings and equipment at College Park is in excess of fifty million dollars. (See map on pages 6 and 7 for location of buildings.)

In addition, two United States Government buildings are located on the campus. The Eastern Experiment Station of the United States Bureau of Mines has general laboratories which cooperate with the University in certain phases of advanced instruction. The Technological Research Laboratory of the United States Fish and Wildlife Service contains laboratories for research in fisheries dealing with chemical, chemical engineering, bacteriological, nutritional, and biological subjects. Under certain conditions graduate students may use the facilities of these laboratories.

Baltimore

The group of buildings located in the vicinity of Lombard and Greene Streets provides facilities for the Baltimore Division of the University, embracing the professional Schools and Hospital. The group is comprised of the original Medical School Building, erected in 1812; the Out-Patient Department formerly University Hospital; the new University Hospital, with approximately 450 beds; the Psychiatric Institute, an addition to University Hospital providing 200 additional general hospital beds and 90 beds for psychiatric cases; the Frank C. Bressler Building, for medical research; the Dental-Pharmacy Building, with dental clinics; the Nurses' Residence; the Law Building; Davidge Hall, the Medical Library; Gray Laboratory, housing

medical laboratories and general offices; and the Administration Building. The Kelley Memorial, adjacent to University Hospital, is used jointly by the University and the Pharmaceutical Association.

LIBRARY FACILITIES

Libraries are located at both the College Park and Baltimore divisions of the University. They house in the aggregate over 300,000 bound and fully catalogued volumes, and they receive over 3500 periodicals.

The University is now in the process of constructing at College Park a library that will house one million volumes, with reading rooms that will accommodate two thousand students. At the present time the collections on the campus are shelved in the General Library, the Chemistry, Engineering and Physical Sciences, Entomology, and Home Economics Libraries, as well as in other units.

Facilities in Baltimore consist of the Libraries of the Schools of Dentistry and Pharmacy, containing 27,000 volumes; the School of Law, 30,000 volumes; the School of Medicine, 37,000 volumes; and the School of Nursing, 3200 volumes. The Medical Library is housed in Davidge Hall; the remaining three libraries have quarters in the buildings of their respective schools. Facilities for the courses in Arts and Sciences are offered jointly by the Libraries of the Schools of Dentistry and Pharmacy. Plans are in preparation for a new Medical Sciences Library.

The University library system is able to supplement its reference service to graduate students and faculty by borrowing material through Inter-Library Loan. Within a short distance from College Park are located the excellent facilities of the Library of Congress, the Department of Agriculture, the Department of Education, and other agencies of the Federal Government.

ADMISSION PROCEDURE

Applicants from Secondary Schools:

The high school student should make application for admission during his senior year. It is desirable to have the application sent to the Admissions Office as soon as possible after the mid-year grades are available. If the applicant is accepted, final high school grades must be sent to the Admissions Office from the high school principal.

Time of Admission:

New students should plan to enter the University at the beginning of the fall semester if possible. Students, however, will be admitted at the beginning of either semester.

Applications should be filed not later than August 15 for the fall semester and January 1 for the spring semester. If a student does not apply by these dates it may not be possible to process his application even if his records and recommendations are acceptable.

The student who wishes to live in a dormitory must submit an application much earlier than the above dates. There is a limit to the space available in dormitories. A woman student cannot be admitted to the University after dormitory facilities are filled unless the student is able to commute from her home.

Method of Application:

Application forms for all undergraduate schools except Pharmacy may be obtained by writing to the Director of Admissions, University of Maryland, College Park, Maryland. Application forms for the School of Pharmacy may be obtained by writing to the Director of Admissions, University of Maryland, Lombard and Greene Streets, Baltimore, Maryland.

Applicants from Other Colleges and Universities:

An applicant seeking admission from another college or university should secure an application blank from the Director of Admissions. He should supply the personal data here requested and ask his secondary school principal or headmaster to enter his secondary school record and forward the blank to the Director of Admissions; next, he should request the Registrar of the college or university which he has attended to send a transcript of his grades to the Director of Admissions at College Park.

Graduate School:

Applications for admission to the Graduate School should be addressed to the Dean of the Graduate School, University of Maryland, College Park, Maryland.

Professional Schools:

Information concerning admission to the professional schools (Dentistry, Law, Medicine and Pharmacy) in Baltimore may be obtained by writing to the Dean of the College concerned or to the Director of Admissions, University of Maryland, Lombard and Greene Streets, Baltimore, Maryland.

UNDERGRADUATE FOREIGN STUDENTS

The foreign student applying for admission to the undergraduate schools of the University of Maryland should make application at least three months in advance of the term for which he is applying. He will be required to submit an application for admission on a form furnished upon request by the Admissions Office of this University and official copies of his secondary school training, certificates of completion of State Secondary School Examinations, and records of any collegiate studies completed at other colleges or universities in the United States or elsewhere. He will also be required to furnish proof of his ability to read, write, speak, and understand English sufficiently well to expect to pursue successfully courses of study in an

American university. Upon acceptance of his application for admission, Immigration form I-20 will be furnished by the Director of Admissions.

Every foreign student is expected to see the foreign student advisor as soon as possible after arriving at the University of Maryland. The advisor's office is located in the Administration Building on the College Park campus of the University. The advisor will be able to assist the student in solving some of the problems that confront foreign students.

REQUIREMENTS FOR ADMISSION

Admission from secondary school is based upon evidence indicating the applicant's probable success in the program of his choice at the University. The applicant's entire secondary school record constitutes an important part of such evidence.

Residents of Maryland:

A graduate of an accredited secondary school in Maryland who is certified and recommended by his principal or headmaster will be admitted without examination, provided that his program has included the subjects required for the college and curriculum which he wishes to enter.

A graduate of an accredited secondary school in Maryland whose secondary record indicates probable success in the University will be admitted without examination, provided that his program has included the subjects required for the college and curriculum which he wishes to enter, and provided that he has a satisfactory general recommendation from his secondary school as to his character and ability.

A graduate of an accredited secondary school of Maryland whose secondary school preparation has not included the subjects necessary for the college and curriculum which he wishes to enter or whose academic performance has not been consistently satisfactory may be asked to take examinations to supplement his secondary school record.

Examinations are given at College Park at stated intervals during the year. On the basis of the applicant's secondary school record and his performance on the examinations, he may be given a regular admission or he may be admitted on a trial status.

The student who is admitted on a trial status receives special counselling and guidance for which a special fee is charged. He is required to take a limited program until he has demonstrated that he can do satisfactory work at the college level. He is not eligible for re-instatement if his college performance during his first semester is unsatisfactory.

Out-of-State Applicants:

To be eligible for consideration for admission, the graduate of an accredited out-of-state secondary school should have attained college certification

grades in his college preparatory subjects, such grades to be not less than one letter grade higher than the passing grade.

Transfer Students:

A student must be in good standing as to scholarship and character to be eligible for transfer to the University. Advanced standing is assigned to a transfer student from an accredited institution under the following conditions: (1) A minimum of one year of resident work or not less than 30 semester hours (including the meeting of all University and curricular requirements) is necessary for a degree; (2) The University reserves the right to make the assignment of transfer credit conditional upon the student's making a satisfactory record during his first semester at the University; (3) The University reserves the right to revoke advanced standing if the transfer student's progress is at any time unsatisfactory.

Special Students:

An applicant who is at least twenty-one years of age, and who has not completed the usual preparatory course, may be admitted to such courses as he seems qualified to take. A special student is ineligible to matriculate for a degree until he has satisfied the entrance requirements.

Unclassified Students:

An applicant who meets entrance requirements but who does not wish to pursue a program of study leading to a degree is eligible for admission to enroll in courses for which he has the prerequisites.

SUBJECT REQUIREMENTS

The high school or preparatory school student who intends to apply for admission to the University should plan his secondary school program carefully. He should select a program that will prepare him adequately to begin college work at the college level. He should allow for the fact that his interests may change by selecting a secondary school program that will enable him, when he enters the University, to have a maximum freedom of choice among the various curricula offered at the University.

Every candidate for admission to the University must normally present sixteen units of high school subjects. It is required that seven of the minimum sixteen units be in college preparatory subjects as follows:

English	4 units
Mathematics (preferably Algebra)	1 unit
History or Social Sciences	1 unit
Biological or Physical Sciences	1 unit

The other units should be chosen to give the student as strong a preparation as possible for his work at the University. At least twelve of the units

presented should be in college preparatory courses in academic subjects. Although there is no entrance requirement in foreign languages, two or more units are highly desirable for many programs and are suitable for all programs. Likewise it is desirable that each student offer two units in history or social sciences, and two units in the biological and physical sciences. It is strongly recommended that all students present a unit of plane geometry in addition to the one or two units of algebra.

The following preparatory program has been designed to give the prospective applicant great freedom of choice among the many curricula at the University. The student who successfully completes this program will be able to enter any curriculum at the University and to proceed without loss of time.

English	4 units
Mathematics	3½ units
(algebra 2 units; plane geometry 1 unit; trigonometry ½ unit. Prospective engineering students should in- clude solid geometry ½ unit)	
History or Social Sciences	2 units
Biological and Physical Sciences	2 units
Foreign Language	2 units
Unspecified	2½ units

16 units

Deviation from these recommendations is permitted, but should be undertaken only upon competent advice. An unwise selection of preparatory courses can effectively prevent the student from pursuing certain curricula at the University or materially increase the time necessary to complete a particular curriculum. Every prospective applicant should be certain that his preparation in mathematics is adequate for any program he might conceivably wish to enter. A special fee will be charged for all remedial work in mathematics with the exception of the course in solid geometry.

A well-planned program of college preparatory work contributes much to the success of a student in his college work. This fact has an important bearing in estimating whether a candidate for admission is likely to be successful in his work at the University.

The accompanying chart summarizes the specific requirements of the various curricula offered at the University.

REQUIRED AND RECOMMENDED SUBJECTS FOR ADMISSION TO THE VARIOUS UNDERGRADUATE PROGRAMS

Note: The student should follow the recommendations given below and should fill out the rest of his high school program with suitable electives. At least twelve (12) of the units offered should be in academic subjects.

	English	Mathematics		Biological and Physical Sciences	Foreign Languages	History and Social Sciences
		Required:				
COLLEGE OF AGRICULTURE Majors in Agriculture-Engineering, Agricultural Chemistry	4 units required	Algebra—2 units Plane Geometry—1 unit Strongly recommended: Solid Geometry— $\frac{1}{2}$ unit Trigonometry— $\frac{1}{2}$ unit	1 unit required 2 or 3 units recommended, including Chemistry—1 unit Physics—1 unit	2 or more units recommended French, Latin, or German	1 unit required 2 or more units recommended	
		Essential: Algebra—1 unit Plane Geometry—1 unit Strongly recommended: An additional unit of Algebra and $\frac{1}{2}$ unit of Trigonometry	1 unit required 2 or 3 units recommended, including Chemistry—1 unit Physics—1 unit			
COLLEGE OF AGRICULTURE Majors in Botany, Entomology	4 units required	1 unit required Strongly recommended: Algebra—1 or 2 units Plane Geometry—1 unit	1 unit required	No requirement	1 unit required	
COLLEGE OF AGRICULTURE Majors in General Agriculture, Agricultural Economics and Marketing, Agricultural Education, Agronomy, Animal Husbandry, Dairy, Horticulture, Poultry Husbandry; pre-veterinary program	4 units required					

REQUIRED AND RECOMMENDED SUBJECTS FOR ADMISSION TO THE VARIOUS UNDERGRADUATE PROGRAMS

Note: The student should follow the recommendations given below and should fill out the rest of his high school program with suitable electives. At least twelve (12) of the units offered should be in academic subjects.

	English	Mathematics	Biological and Physical Sciences	Foreign Languages	History and Social Sciences
COLLEGE OF ARTS AND SCIENCES Majors in Chemistry, Mathematics, Physics, and General Physical Science	4 units required	Required : Algebra—2 units Plane Geometry— 1 unit Strongly recommended : Trigonometry— $\frac{1}{2}$ unit Solid Geometry— $\frac{1}{2}$ unit	1 unit required 2 or 3 units recommended, including Chemistry—1 unit Physics—1 unit	2 or more units recommended French, Latin, or German	1 unit required 2 or more units recommended
	4 units required	Required : Algebra—1 unit Plane Geometry— 1 unit Strongly recommended : An additional unit of Algebra and $\frac{1}{2}$ unit of Trigonometry	1 unit required 2 or 3 units recommended, including Chemistry—1 unit Physics—1 unit	2 or more units recommended French, Latin, or German	1 unit required 2 or more units recommended
COLLEGE OF ARTS AND SCIENCES Majors in American Civilization, Art, Classics, English, Foreign Languages, Music, Philosophy, Speech and Dramatic Art Majors in Economics, Geography, History, Psychology, Sociology, pre-law programs	4 units required	1 unit required Strongly recommended : Algebra—2 units Plane Geometry— 1 unit Any student who may wish to take Calculus should include Trigonometry— $\frac{1}{2}$ unit	1 unit required At least 2 units highly desirable : Biology, Chemistry, Physics	2 or more units recommended French, Latin, German, or Spanish	1 unit required 2 or more units recommended

REQUIRED AND RECOMMENDED SUBJECTS FOR ADMISSION TO THE VARIOUS UNDERGRADUATE PROGRAMS

Note: The student should follow the recommendations given below and should fill out the rest of his high school program with suitable electives. At least twelve (12) of the units offered should be in academic subjects.

COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION Programs in Accounting, Financial Administration, Industrial Administration, Insurance and Real Estate, Marketing Administration (Advertising, Foreign Trade and International Finance, Retail Store Management, Sales Management), Personnel Administration, Transportation Administration (Airline and Airport Management, Traffic Management), Public Administration, Office Techniques and Management (Office Management, Office Techniques)	English 4 units required	Mathematics Required : Algebra—1 unit Highly desirable : Plane Geometry— 1 unit	Biological and Physical Sciences 1 unit required	Foreign Languages No requirement (Those interested in Foreign Trade should include 2 units)	History and Social Sciences 1 unit required
COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION Majors in Economics, Foreign Service and International Relations, Geography, Government and Politics, Editorial Journalism, Public Relations	4 units required	Required : Algebra—1 unit Highly desirable : An additional unit of Algebra and 1 unit of Plane Geometry. Any student who may wish to take Calculus should include $\frac{1}{2}$ unit of Trigonometry	1 unit required At least 2 units highly desirable : Biology, Chemistry, Physics	2 or more units recommended French, Latin, German, or Spanish	1 unit required 2 or more units recommended

REQUIRED AND RECOMMENDED SUBJECTS FOR ADMISSION TO THE VARIOUS UNDERGRADUATE PROGRAMS

Note: The student should follow the recommendations given below and should fill out the rest of his high school program with suitable electives. At least twelve (12) of the units offered should be in academic subjects.

COLLEGE OF EDUCATION Programs in English, Foreign Languages, Social Sciences, Speech	English 4 units required	Mathematics 1 unit required Recommended: Algebra—1 unit Plane Geometry—1 unit	Biological and Physical Sciences 1 unit required At least 2 units highly desirable: Biology, Chemistry, Physics	Foreign Languages 2 or more units recommended French, German, Latin, or Spanish	History and Social Sciences 1 unit required 2 or more units recommended
COLLEGE OF EDUCATION Program in Mathematics	4 units required	Required: Algebra—1 unit Plane Geometry—1 unit Strongly recommended: Additional unit of Algebra Trigonometry— $\frac{1}{2}$ unit Solid Geometry— $\frac{1}{2}$ unit	1 unit required 2 or 3 units recommended, including Chemistry—1 unit Physics—1 unit	2 or more units recommended French, German, or Latin	1 unit required 2 or more units recommended
		Required: Algebra—1 unit Plane Geometry—1 unit Additional unit of Algebra Trigonometry— $\frac{1}{2}$ unit	1 unit required 2 or 3 units recommended from the following group: Biology—1 unit Chemistry—1 unit Physics—1 unit	2 or more units recommended French, German, or Latin	1 unit required 2 or more units recommended
COLLEGE OF EDUCATION Program in Natural Sciences	4 units required	Required: Algebra—1 unit Plane Geometry—1 unit Additional unit of Algebra Trigonometry— $\frac{1}{2}$ unit	1 unit required 2 or 3 units recommended from the following group: Biology—1 unit Chemistry—1 unit Physics—1 unit	2 or more units recommended French, German, or Latin	1 unit required 2 or more units recommended
		Required: Algebra—1 unit Plane Geometry—1 unit Additional unit of Algebra Trigonometry— $\frac{1}{2}$ unit	1 unit required 2 or 3 units recommended from the following group: Biology—1 unit Chemistry—1 unit Physics—1 unit	2 or more units recommended French, German, or Latin	1 unit required 2 or more units recommended
COLLEGE OF EDUCATION Programs in Art Education, Business Education, Childhood Education, Elementary Education, Home Economics Education, Industrial Education, Music Education, Physical Education	4 units required	Required: Algebra—1 unit Plane Geometry—1 unit Additional unit of Algebra Trigonometry— $\frac{1}{2}$ unit	1 unit required 2 or 3 units recommended from the following group: Biology—1 unit Chemistry—1 unit Physics—1 unit	2 or more units recommended French, German, or Latin	1 unit required 2 or more units recommended
		Required: Algebra—1 unit Plane Geometry—1 unit Additional unit of Algebra Trigonometry— $\frac{1}{2}$ unit	1 unit required 2 or 3 units recommended from the following group: Biology—1 unit Chemistry—1 unit Physics—1 unit	2 or more units recommended French, German, or Latin	1 unit required 2 or more units recommended

REQUIRED AND RECOMMENDED SUBJECTS FOR ADMISSION TO THE VARIOUS UNDERGRADUATE PROGRAMS

Note: The student should follow the recommendations given below and should fill out the rest of his high school program with suitable electives. At least twelve (12) of the units offered should be in academic subjects.

English	Mathematics	Biological and Physical Sciences	Foreign Languages	History and Social Sciences
4 units required	Required: Algebra—2 units Plane Geometry—1 unit Solid Geometry— $\frac{1}{2}$ unit Strongly recommended: Trigonometry— $\frac{1}{2}$ unit	1 unit required Strongly recommended: Chemistry—1 unit Physics—1 unit	No requirement	1 unit required
4 units required	1 unit required Strongly recommended: Algebra—1 unit Plane Geometry—1 unit	1 unit required 1 unit of Chemistry desirable (All programs except Practical Arts, Crafts, Textiles and Clothing require courses in Chemistry at the University)	No requirement 2 units desirable	1 unit required
4 units required	1 unit required Strongly recommended: Algebra—2 units Plane Geometry—1 unit Trigonometry— $\frac{1}{2}$ unit Solid Geometry— $\frac{1}{2}$ unit	1 unit required Strongly recommended: Physics—1 unit Chemistry or another science—1 unit	2 units recommended	1 unit required 2 units recommended

COLLEGE OF ENGINEERING AND AERONAUTICAL SCIENCES

Majors in Aeronautical, Chemical, Civil, Electrical, Mechanical Engineering; Fire Protection, Metallurgy

COLLEGE OF HOME ECONOMICS

Majors: General, Home Economics Education, Home Economics Extension, Institution Management, Foods and Nutrition, Textiles, Textiles and Clothing, Practical Arts, Crafts.

COLLEGE OF MILITARY SCIENCE

Program: Military Science (to enroll, students must have the physical and mental qualities and attributes essential to the progressive and continuing development of a commissioned officer in the Armed Services)

REQUIRED AND RECOMMENDED SUBJECTS FOR ADMISSION TO THE VARIOUS UNDERGRADUATE PROGRAMS

Note: The student should follow the recommendations given below and should fill out the rest of his high school program with suitable electives. At least twelve (12) of the units offered should be in academic subjects.

	English	Mathematics	Biological and Physical Sciences	Foreign Languages	History and Social Sciences
SCHOOL OF NURSING	4 units required	1 unit required Recommended: Algebra—1 unit Plane Geometry— 1 unit	1 unit required Recommended: Biology—1 unit Chemistry—1 unit Physics—1 unit	2 units desirable	History—1 unit required History—2 units desirable
	4 units required	Required: Algebra—1½ units Plane Geometry— 1 unit	1 unit required	No requirement	1 unit required
Note: 8½ units required as indicated. Of the 7½ elective units not more than 4 may be in vocational subjects.					
COLLEGE OF PHYSICAL EDUCATION, RECREATION AND HEALTH		1 unit required Strongly recommended: Algebra—1 unit Plane Geometry— 1 unit	1 unit required	No requirement	1 unit required
	4 units required				
Programs in Physical Education, Recreation, Physical Therapy, Health Education (both general and professional programs). Freedom from physical handicaps as determined by medical examination required.					

THE PROGRAM IN AMERICAN CIVILIZATION

The University considers that it is important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American Civilization. This program is also designed to provide the student with a general educational background.

Work in American Civilization is offered at three distinct academic levels. The first level is required of all freshmen and sophomores at the University and is described below. The second level is for undergraduate students wishing to carry a major in this field (see catalog for the College of Arts and Sciences). The third level is for students desiring to do graduate work in this field (see catalog for the Graduate School).

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the Program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

The 24 semester hours in American Civilization are as follows:

1. English (12 hours, Eng. 1, 2 and 3, 4 or 5, 6), American History (6 hours, Hist. 5, 6), and American Government (3 hours, G. & P. 1) are required subjects; however, students who qualify in one, two or all three of these areas by means of University administered tests are expected to substitute certain elective courses. Through such testing a student may be released from 3 hours of English (9 hours would remain an absolute requirement), 3 hours of American History (3 hours remaining as an absolute requirement), and 3 hours of American Government. Students released from 3 hours of English will take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in History will take Hist. 56 instead of Hist. 5 and 6. Students who have been exempted from courses in English, History or American Government may not take such courses for credit.

2. For the 3 additional hours of the 24 hours required, students in the College of Business and Public Administration elect one course from the following group (Elective Group I):

Economics 37, Fundamentals of Economics. (Not open to Freshmen. Students who may wish to take additional courses in economics should substitute Economics 31 for Economics 37.)

Philosophy 1, Philosophy of Modern Man

Sociology 1, Sociology of American Life

(Students enrolled in the College of Business and Public Administration will normally meet this requirement by taking Economics 31 in the Sophomore year.)

3. Students who, on the basis of tests, have been released from 3, 6 or 9 hours in otherwise required courses in English, American History or Ameri-

can Government (see 1 above), shall select the replacements for these courses from any or all of the following groups: (a) more advanced courses in the same department as the required courses in which the student is excused, or (b) Elective Group I (see 2 above), provided that the same course may not be used as both a Group I and a Group II choice, or (c) Elective Group II. Group II consists of the following 3-hour courses:

History 2, History of Modern Europe; either History 51 or 52, The Humanities; either Music 20, Survey of Music Literature or Art 22, History of American Art; Psychology 1, Introduction to Psychology; and Sociology 5, Anthropology.

PHYSICAL EDUCATION REQUIREMENTS FOR MEN AND WOMEN

All undergraduate men and women students classified academically as freshmen or sophomores who are registered for more than six semester hours of credit are required to enroll in and successfully complete four prescribed courses in physical education for a total of four semester hours of credit. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Men and women who have reached their thirtieth birthday are exempt from these courses. Students who are physically disqualified from taking these courses must enroll in adaptive courses, for which credit will be given. Transfer students who do not have credit in these courses or their equivalent must complete them or take them until graduation, whichever occurs first. Students with military service may receive credit for these courses by applying to the Air Force R.O.T.C. Records Office.

Required Uniform. A regulation uniform as prescribed by the College of Physical Education, Recreation, and Health is required for both men and women.

Required Equipment. Students will be required to provide individual equipment for certain elective courses such as archery, badminton, golf, and tennis.

REQUIREMENTS IN MILITARY INSTRUCTION

All male students unless specifically exempted under University rules are required to take elementary military training for a period of two years. This training includes two hours of regularly scheduled drill per week at 11:00 A.M. on Tuesdays and Thursdays and other drill formations at such times as designated by the Professor of Air Science (PAS). The successful completion of this course is a prerequisite for graduation, but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of military training will be required to complete the course or take it until graduation, whichever occurs first.

Any male student who has not reached his twenty-fifth birthday at the time of initial enrollment in any undergraduate or graduate curriculum of

this University may apply for advanced training in the Air Force Reserve Officers' Training Corps (A.F.R.O.T.C.) upon satisfaction of the basic requirements. Successful completion of the advanced A.F.R.O.T.C. course and a baccalaureate degree will lead to a commission in the United States Air Force Reserve or a Certificate of Completion, as applicable. Advanced A.F.R.O.T.C. training may be carried as an integral part of the student's academic program.

BASIC EXEMPTION FROM MILITARY INSTRUCTION

1. Students who have completed the basic course in other approved units of the United States Air Force, Army, or Naval R. O. T. C. will receive credit.
2. Students holding commissions in the Reserve Corps of the Army, Navy, Marine Corps, Coast Guard, or Air Force will receive credit.
3. Students who have served in the Army, Navy, Marine Corps, Coast Guard, or Air Force for a period of time long enough to be considered equivalent to the training received in the A. F. R. O. T. C. program will receive credit. Short periods of service in any of the branches named above will be evaluated and allowed as credit toward completion of the course.
4. Graduate students will be exempt.
5. Students classified as "special students" who are registered for less than seven semester hours will be exempt.
6. Students who have passed their thirtieth birthday before starting the course will be exempt from any part of the course not already completed.
7. Students who are not citizens of the United States or one of its territorial possessions will be exempt. Students having applied for United States citizenship will not be exempt.

CURRICULA AND PROGRAMS

AT COLLEGE PARK

College of Agriculture. The College of Agriculture provides training leading to the degree of Bachelor of Science. Curricula are offered in Agricultural Chemistry, Agricultural Economics and Marketing, Agricultural Education and Rural Life, Agriculture-Engineering, Agnomy (crops and soils), Animal Husbandry, Botany (plant cytology, morphology and taxonomy; plant pathology; and plant physiology and ecology), Dairy (dairy husbandry and dairy technology), Entomology, General Agriculture, Horticulture (pomology and olericulture, floriculture and ornamental horticulture and commercial processing of horticultural crops), Poultry Husbandry, and Pre-Veterinary Science.

College of Arts and Sciences. The College of Arts and Sciences provides liberal training leading to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Music. Curricula are offered in American Civilization, Art,

Bacteriology, Chemistry, Classical Languages (Greek and Latin), Crime Control, English, Fisheries, Foreign Language (French, German, Hebrew, Russian, and Spanish), General Biological Sciences, General Physical Sciences, History, Mathematics, Music, Philosophy, Physics, Pre-Dentistry, Pre-Law, Pre-Medicine, Psychology, Social Science, Sociology, Speech, and Zoology.

The College of Arts and Sciences offers combined degrees with the Schools of Dentistry, Medicine, and Law.

College of Business and Public Administration. The College of Business and Public Administration offers curricula leading to a Bachelor of Science degree in Business Organization and Administration, Economics, Geography, Government and Politics, Journalism, Office Techniques and Management, and Public Administration.

College of Education. The College of Education offers curricula leading to the degrees of Bachelor of Arts and Bachelor of Science. Curricula are offered in Academic Education, Art Education, Business Education, Elementary Education, Health Education, Home Economics Education, Industrial Education, Music Education, Nursery School-Kindergarten Education, and Physical Education.

College of Engineering, The Glenn L. Martin Institute of Technology. The College of Engineering, The Glenn L. Martin Institute of Technology, offers curricula leading to a Bachelor of Science degree in Aeronautical Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Metallurgy, and a Bachelor of Science degree in Fire Protection.

College of Home Economics. The College of Home Economics offers curricula leading to the degree of Bachelor of Science in Foods and Nutrition, General Home Economics, Home Economics Education, Home Economics Extension, Institution Management, Practical Art, Crafts, and Textiles and Clothing.

College of Military Science. The College of Military Science offers curricula leading to the degree of Bachelor of Science in Military Science. These curricula are especially designed for male and female students who wish to pursue a career as an officer in the Armed Forces.

College of Physical Education, Recreation and Health. The College of Physical Education, Recreation and Health offers curricula leading to the degree of Bachelor of Science in Physical Education, in Health Education, and in Recreation. In addition, this College conducts the required physical education program for freshmen and sophomore men and women, and the required health education program for freshmen women. The required physical education program is designed to correct and improve the physical development of all students and to provide carry-over values for after school life. This College also administers and conducts the Intramural Sports program for men and women.

College of Special and Continuation Studies. The College of Special and Continuation Studies extends the facilities of the University by offering educational programs throughout the State of Maryland and the environs of the District of Columbia. A limited program of late afternoon, evening and Saturday morning courses, both on and off campus, is offered for mature students who are unable to follow a full-time program of studies at College Park. In cooperation with the Armed Services, the College has established overseas teaching centers in the North Atlantic area, the Far East, Europe, Africa, and the Near East.

The College of Special and Continuation Studies offers a Bachelor of Arts degree in General Studies to mature, adult off-campus students.

Summer School. The Summer School of six weeks' duration provides programs of study to persons who find it convenient to attend the University during the summer months. Instruction is offered in most of the departments of the University. In the College of Education the offerings are considerably expanded. Teachers in service and other persons who are employed during the regular school year are offered a wide variety of courses.

Graduate School. The Graduate School is charged with the administration and development of programs of advanced study and research for graduate students in all branches of the University. Through these programs the University confers the degrees of Master of Arts, Master of Arts in American Civilization, Master of Business Administration, Master of Education, Master of Science, Doctor of Education and Doctor of Philosophy. The Graduate Faculty consists of regular and associate members chosen in accordance with the Plan of Organization of the Graduate Faculty. The direction of individual programs and thesis is primarily assigned to the regular members of the Graduate Faculty.

AT BALTIMORE

The Schools of Dentistry, Law, Medicine, Nursing, and Pharmacy offer curricula leading to professional degrees in their respective fields.

THE ACADEMIC DIVISIONS

Five academic divisions have been established in the University. These are constituted as follows:

The Division of Biological Sciences. Chairman, Dr. John E. Faber, Professor of Bacteriology. This division includes the Departments of Bacteriology, Botany, Entomology, Zoology, and other departments interested in this field.

The Division of Humanities. Chairman, Dr. Adolf E. Zucker, Professor of Foreign Languages. This division includes the Departments of Art, Comparative Literature, English Language and Literature, Foreign Languages and Literature, Music, Practical Art, Philosophy, Speech, and other departments interested in this field.

The Division of Physical Sciences. Chairman, Dr. Wilbert J. Huff, Professor of Chemical Engineering. This division includes the Departments of Chemistry, Engineering, Mathematics, Physics, and other departments interested in this field.

The Division of Social Sciences. Chairman, Dr. Harold E. Hoffsommer, Professor of Sociology. This division includes the Departments of Agricultural Economics, Economics, Government and Politics, History, Home Management, Psychology, Sociology, and other departments interested in this field.

The Lower Division. Chairman, Dr. Charles E. White Professor of Chemistry. This division includes departments which offer courses to students in the freshman and sophomore years.

DEGREES AND CERTIFICATES

The University confers the following degrees: Bachelor of Arts, Bachelor of Laws, Bachelor of Music, Bachelor of Science, Bachelor of Science in Nursing, Bachelor of Science in Pharmacy, Master of Arts, Master of Arts in American Civilization, Master of Business Administration, Master of Education, Master of Science, Doctor of Dental Surgery, Doctor of Education, Doctor of Medicine, and Doctor of Philosophy.

Students in the two-year curricula may be awarded certificates.

No baccalaureate degree will be awarded to a student who has had less than one year of resident work in this University. The last thirty semester credits in any curricula leading to a baccalaureate degree must be taken in residence at the University. Candidates for the baccalaureate degree in combined curricula at College Park and Baltimore must complete a minimum of thirty semester credits at College Park.

An average mark of C (2.0) is required for graduation. The C average is computed on the basis of the courses required by each student's curriculum. The average of transfer students and of those seeking combined degrees is computed only on the courses taken in residence in the University and in satisfaction of the non-professional curricular requirements of the College granting the degree. An over-all average is also computed to include all courses taken in the University as a basis for the award of honors and for such other uses as may be deemed appropriate.

The requirements for graduation vary according to the character of work in the different Colleges and Schools. Full information regarding specific College requirements for graduation will be found in the catalogs for the various Colleges.

Each candidate for a degree must file, eight weeks prior to the date he expects to graduate, a formal application for a degree in the Office of the Registrar. Candidates for degrees must attend a convocation at which degrees are conferred and diplomas are awarded. Degrees are conferred *in absentia* only in exceptional cases.

FEES AND EXPENSES

GENERAL

All checks or money orders should be made payable to the University of Maryland for the exact amount of the charges. In cases where students have been awarded General Assembly Grants or University Grants, the amount of such grants will be deducted from the bill.

All fees are due and payable at the time of registration, and students should come prepared to pay the full amount of the charges. No student will be admitted to classes until such payment has been made. (Veterans are required to comply with these conditions if the University does not have in its possession at the time of registration an approved Certificate of Eligibility and Entitlement from the Veterans Administration.)

The University reserves the right to make such changes in fees and other charges as may be found necessary, although every effort will be made to keep the cost to the student as low as possible.

No degree will be conferred, nor any diploma, certificate, or transcript of record issued to a student who has not made satisfactory settlement of his account.

EXPLANATION OF FEES

The Fixed Charges Fee is not a charge for tuition. It is a charge to help defray the cost of operating the University's physical plant, to pay administrative and clerical expenses and other costs which ordinarily would not be included as a cost of teaching personnel and teaching supplies.

The Athletic Fee is charged for the support of the Department of Intercollegiate Athletics. All students are eligible and all students are encouraged to participate in all of the activities of this department and to attend all contests in which they do not participate.

The Special Fee is used to pay interest on and amortize the cost of construction of the Student Union Building, the Activities Building, and the Swimming Pool.

The Student Activities Fee is a mandatory fee included at the request of the Student Government Association. It covers subscription to the *Diamond-back*, student newspaper; the *Old Line*, literary magazine; the *Terrapin*, yearbook; class dues; and includes financial support for the musical and dramatic clubs and a cultural entertainment series.

The Infirmary Fee is charged for the support of the Student Health Service but does not include expensive drugs or special diagnostic procedures. Expensive drugs will be charged at cost and special diagnostic procedures, such as x-ray, electro-cardiographs, basal metabolic rates, etc., will be charged at the lowest cost prevailing in the vicinity.

Students who register for the second semester but not for the first

semester are required to pay the following additional fees: Athletic, \$7.50; Student Activities, \$8.00; Special, \$15.00; Recreational Facilities Fee, \$5.00; Infirmary, \$2.50; Advisory and Testing, \$5.00.

DEFINITION OF RESIDENCE AND NON-RESIDENCE

Students who are minors are considered to be resident students if at the time of their registration their parents have been domiciled in the State of Maryland for at least one year.

The status of the residence of a student is determined at the time of his first registration in the University and may not thereafter be changed by him unless, in the case of a minor, his parents move to and become legal residents of Maryland by maintaining such residence for at least one full year. However, the right of the minor student to change from a non-resident status to resident status must be established by him prior to the registration period set for any semester.

Adult students are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least one year provided such residence has not been acquired while attending any school or college in Maryland or elsewhere.

The word "domicile" as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.

FEES FOR RESIDENTS AND NON-RESIDENTS

Fees for Undergraduate Students:			
Maryland Residents	First Semester	Second Semester	Total
Fixed Charges	\$ 82.00	\$ 83.00	\$165.00
Athletic Fee	15.00	....	15.00
Student Activities Fee	12.00	....	12.00
Special Fee	30.00	....	30.00
Recreational Facilities Fee	10.00	....	10.00
Infirmary Fee	5.00	....	5.00
Advisory and Testing Fee	5.00	....	5.00
	<u>\$159.00</u>	<u>\$ 83.00</u>	<u>\$242.00</u>
Residents of the District of Columbia,	169	93.00	262.00
Other States and Countries	Semester	Semester	Total
Tuition Fee for Non-Resident			
Students	\$125.00	\$125.00	\$250.00
Total for Non-Resident Students ..	<u>\$284.00</u>	<u>\$208.00</u>	<u>\$490.00</u>
Board and Lodging			
Board	\$200.00	\$200.00	\$400.00
Dormitory Room:			
Maryland Residents	70-85	70-85	140-170
Other States and Countries...	90-110	90-110	180-220

up \$10.00

up \$2

The above fees do not apply to the temporary Veteran's Housing Units. The rates for these units are as follows:

Family Units: Two-room apartment \$40 per month; three-room apartment \$43 per month.

SPECIAL FEES

Matriculation Fee for undergraduates, payable at time of first registration in the University	\$ 10.00
Diploma Fee for Bachelor's degree	10.00
Engineering College Fee, per semester	4.00
Home Economics College Fee, per semester	10.00
Special Fee for students requiring additional preparation in Mathematics, per semester	30.00
(Required of students whose curriculum calls for Math. 5, 10 or 18 and who fail in qualifying examination for these courses.)	
Special Guidance Fee per semester (for students who are required or who wish to take advantage of the effective study course, and/or the tutoring service offered by the Dean of Students' Office.....)	15.00
R. O. T. C. Uniform Cleaning Fee, per year (Applicable to students registered in Basic R. O. T. C.—refundable if uniform is not issued) ..	2.50
Room Key Deposit (A room key deposit is payable upon initial entry to the dormitories. Upon return of the key, a refund will be made whenever the student does not plan to re-enter the dormitories the next succeeding semester.)	1.00
Fees for Auditors are exactly the same as fees charged to students registered for credit, with the exception that the non-resident fee will not be charged in the case of students not registering for credit in any courses.	

LABORATORY AND OTHER FEES

Laboratory Fees Per Semester Course:

Agricultural Engineering	\$ 3.00	Foods and Home Management, each	3.00 and 7.00
Bacteriology	10.00 and 20.00	Horticulture	5.00
Botany	5 and 10.00	Industrial Education... ..	5.00 and 7.50
Business Administration	7.50	Journalism	3.00 and 6.00
Statistics	3.50	Mechanical Engineering	3.00
Chemical Engineering	8.00	Music (Applied Music only)... ..	40.00
Chemistry	10.00	Physical Activities Courses....	3.00
Education (depending on Laboratory)	1.00, 2.00, 3.00, 5.00	Physics—	
Practice Teaching	30.00	Lecture Demonstration	2.00
Dairy	3.00	Introductory	3.00
Electrical Engineering	4.00	All Other	10.00
Entomology	3.00	Psychology	4.00
Home Economics—		Office Techniques and Management	7.50
(Non-Home Economics students)		Speech (depending on Laboratory)	1.00, 2.00, 3.00 and 7.50
Practical Art, Crafts, Textiles and Clothing	3.00	Radio and Stage Craft	2.00
		Zoology	8.00

Miscellaneous Fees and Charges

Fee for part-time students per credit hour..... 10.00

(The term "part-time students" is interpreted to mean undergraduate students taking 6 semester credit hours or less. Students carrying more than 6 semester hours are considered to be full time and must pay the regular full-time fees.)

Late Registration Fee..... 5.00

(All students are expected to complete their registration, including the filing of class cards and payment of bills, on the regular registration days. Those who do not complete their registration during the prescribed days must pay this fee.)

Fee for change in registration..... 3.00

Fee for failure to report for medical examination appointment..... 2.00

Special Examination Fee—to establish college credit—per semester hour 5.00

Makeup Examination Fee (for students who are absent during any class period when tests or examinations are given)..... 1.00

Transcript of Record Fee (one transcript furnished without charge).. 1.00

Property Damage Charge: Students will be charged for damage to property or equipment. Where responsibility for the damage can be fixed, the individual student will be billed for it; where responsibility cannot be fixed, the cost of repairing the damage or replacing equipment will be prorated.

Library Charges:

Fine for failure to return book from General Library before expiration of loan periodper day .05

Fine for failure to return book from Reserve Shelf before expiration of loan period:

First hour overdue25

Each additional hour overdue05

In case of loss or mutilation of a book, satisfactory restitution must be made.

In the event it becomes necessary to transfer uncollected charges to the Cashier's office, an additional charge of \$1.00 is made.

Textbooks and Supplies

Textbooks and classroom supplies: These costs vary with the course pursued, but will average per semester..... 35.00

Fee for Graduate Students

Fees for students carrying 10 or more semester credit hours.....100.00

Fee per semester hours for students carrying less than 10 semester credit hours 10.00

Matriculation Fee, payable only once, at time of first registration.... 10.00

Diploma Fee for Master's Degree 10.00

Graduation Fee for Doctor's Degree 50.00

Infirmary Fee (voluntary) 5.00

Foreign Language examination (first examination without charge).. 5.00

Notes: Fees in the Graduate School are the same for all students, whether or not they are residents of the State of Maryland.

All fees, except Diploma Fee and Graduation Fee, are payable at the time of registration for each semester.

Diploma Fee and Graduation Fee must be paid prior to graduation.

No provision for housing students is made by the University.

The Infirmary services normally furnished the undergraduate students are available to graduate students who elect to pay the fee of \$5.00 for the year (not including Summer School), provided that the fee is paid not later than the end of the first week of classes in the regular academic session. A graduate student entering in February may benefit in the same manner by the payment of \$2.50.

Fees for Off-Campus Courses

Matriculation Fee (payable once, at time of first registration by all students—full time and part time, candidates for degrees, and non-candidates):

For Undergraduates 10.00

For Graduates 10.00

Fee for all students—limit 6 hours. For exceptional adult students taking off-campus courses the limit may be increased to 9 hours.

Charge per credit hour 10.00

Laboratory Fees: A laboratory fee, to cover cost of materials used, is charged in laboratory courses. Fees vary with the course and can be ascertained in any case by inquiry to the Dean of the College of Special and Continuation Studies.

WITHDRAWAL AND REFUND OF FEES

Any student compelled to leave the University at any time during the academic year should file an application for withdrawal, bearing the proper signatures, in the Office of the Registrar. If this is not done, the student will not be entitled, as a matter of course, to a certificate of honorable dismissal, and will forfeit his right to any refund to which he would otherwise be entitled. The date used in computing refunds is the date the application for withdrawal is filed in the Office of the Registrar.

In the case of a minor, withdrawal will be permitted only with the written consent of the student's parent or guardian.

Students withdrawing from the University will receive a refund of all charges except board, deposits for room reservations, less the Matriculation Fee and any scholarship credit in accordance with the following schedule:

<i>Period from Date Instruction Begins</i>	<i>Percentage Refundable</i>
Two weeks or less.....	80%
Between two and three weeks.....	60%
Between three and four weeks.....	40%
Between four and five weeks.....	20%
Over five weeks.....	0

Board is refunded only in the event the student withdraws from the University. Refunds of board are made on a pro-rata, weekly basis. Dining Hall cards issued to boarding students must be surrendered at the Auditor's Office in the Administration Building on the day of withdrawal, before any refund will be processed.

In computing refunds to students who have received the benefit of scholarships, the computation will be made in such a way as to return the maximum amount to the scholarship account without loss to the University.

No refund of the Athletic, Student Activity, Special, Recreational Facilities, Infirmary, and Advisory and Testing Fees is made to students who withdraw at the close of the first semester.

No refunds of Fixed Charges, Lodging, Tuition, Laboratory Fees, etc., are allowed when courses are dropped, unless the student withdraws from the University.

When regularly enrolled part-time students in off-campus instruction officially drop a course or courses and continue with one or more courses, they may receive a refund of 80% for the dropped courses if they are officially dropped prior to the third meeting of the class or classes.

TRANSCRIPTS OF RECORDS

Students and alumni may secure transcripts of their scholastic records from the Office of the Registrar. No charge is made for the first copy; for additional copies, there is a charge of \$1.00 for each transcript, except when more than one copy is requested at the same time. In that case, one dollar is charged for the first copy, and fifty cents for each additional copy. Checks should be made payable to the University of Maryland. Transcripts of records should be requested at least one week in advance of the date when the records are actually needed. No transcript of a student's record will be furnished any student or alumnus whose financial obligations to the University have not been satisfied.

SCHOLARSHIPS AND GRANTS-IN-AID

All requests for information concerning scholarships and grants-in-aid should be addressed to the Chairman of the Committee on Scholarships and Grants-in-Aid, University of Maryland, College Park, Maryland. Regulations and procedures for the award of scholarships are formulated by this committee.

The Board of Regents of the University authorizes the award of a limited number of scholarships each year to deserving students. All scholarships and grants for the undergraduate departments of the University at College Park are awarded by a faculty committee. Applicants are subject to the approval of the Director of Admissions insofar as qualifications for admission to the University are concerned. All recipients are subject to the academic and non-academic regulations and requirements of the University.

Scholarships are awarded on the basis of apparent qualifications for leadership. In making awards consideration is given to character, achievement,

participation in student activities, and to other attributes which may indicate potential leadership. The intention of the Committee on Scholarships is to make awards to young men and women who possess the above-mentioned qualifications and who might not otherwise be able to provide for themselves an opportunity for higher education.

The types of scholarships, grants and loan funds available are as follows:

Full Scholarships

The University awards fifty-six full scholarships covering board, lodging, fixed charges, fees and books. Not more than twenty of these scholarships may be held by out-of-state students and at least twelve are reserved for women. Scholastic achievement and participation in student activities are given primary consideration in the award of these scholarships.

University Grants

The University awards to deserving and qualified secondary school graduates a limited number of grants covering fixed charges only.

General Assembly Grants

These grants are for fixed charges and are awarded by members of the Legislature, three for each Senator and one for each member of the House of Delegates. They may be awarded by a member of the House of Delegates or by a Senator only to persons in the county or in the legislative district of Baltimore City which the Delegate or Senator represents. Awards of such grants are subject to approval by the Committee on Scholarships and by the Director of Admissions as to qualifications for admission.

Special Academic Scholarships

A limited number of scholarships is awarded each year to students of exceptional academic ability out of funds derived from campus enterprises. The amount of these scholarships vary depending upon the extent of need. These awards are made by the Committee on Scholarships and Grants-in-Aid in accordance with the general principles underlying the award of all other scholarships.

Endowed Scholarships and Grants

The University has a number of endowed scholarships and special grants. These are paid for by income from funds especially established for this purpose. Brief descriptions of these awards follow:

Albright Scholarship. The Victor E. Albright Scholarship is open to graduates of Garrett County high schools who were born and reared in that county. Application should be made to the high school principals.

Alumni Scholarships. The General Alumni Council of the University Alumni Association provides eleven scholarships in the amount of \$250 each to be awarded respectively to schools or colleges represented on the Alumni Council.

The awards are based on scholarship, leadership and need and are awarded by the Faculty Committee on Scholarships and Grants-in-Aid.

Baltimore Sunpapers Scholarship in Journalism. The Board of Trustees of the A. S. Abell Foundation, Inc., has contributed \$500 to provide a scholarship in journalism to be awarded to a worthy senior in the College of Business and Public Administration who is majoring in Editorial Journalism.

Samuel Wolfe Blankman Grant. The sum of \$100 is awarded each year to a foreign student on the basis of worth and need to be determined by the Committee on Scholarships. The student must be a permanent resident of a country other than the United States, its possessions, or Canada. He may be a member of any college or school in the University.

American Society for Metals Scholarship in Metallurgy. A scholarship of \$400 is available to a competent student in the field of Metallurgy. The award will be made by the faculty in Metallurgy in accordance with the general principles underlying the award of all scholarships in the University.

Borden Agricultural and Home Economics Scholarships. A Borden Agricultural Scholarship of \$300 is granted to that student in the College of Agriculture who has had two or more of the regularly listed courses in dairying and who, upon entering the senior year of study, has achieved the highest average grade of all other similarly eligible students in all preceding college work.

A Borden Home Economics Scholarship of \$300 is granted to that student in the College of Home Economics who has had two or more of the regularly listed courses in foods and nutrition and who, upon entering the senior year of study, has achieved the highest average grade of all other similarly eligible students in all preceding college work.

William F. Childs, Jr. Grant. The Maryland Highway Contractors Association provides a grant of \$500 annually to be awarded to a capable and worthy senior in the Department of Civil Engineering who plans to enter the field of Highway Engineering upon graduation. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Engineering.

Dr. Ernest N. Cory Scholarship. This award is made annually to an outstanding junior or senior in the College of Agriculture, preferably one majoring in Entomology. The amount of the award will vary depending upon the earnings of a trust fund established in honor of Dr. Ernest N. Cory upon his retirement. The Committee on Scholarships and Grants-in-Aid cooperates with the College of Agriculture in selecting the student for this award.

The Danforth Foundation and the Ralston Purina Scholarships. The Danforth Foundation and the Ralston Purina Company of St. Louis offer two summer scholarships to outstanding men students in the College of Agriculture, one for a student who has successfully completed his junior year, the other for a student who has successfully completed his freshman year. The

purpose of these scholarships is to bring together outstanding young men for leadership training.

The Danforth Foundation and the Ralston Purina Company of St. Louis offer two summer scholarships to outstanding Home Economics women students, one to a junior and one to a freshman. The purpose of these scholarships is to bring together outstanding young women for leadership training.

Dairy Technology Scholarships and Grants. The Dairy Technology Society of Maryland and the District of Columbia provides a limited number of scholarships and grants-in-aid for students majoring in Dairy Products Technology. These awards are available both to high school graduates entering the University as freshmen and to students who have completed one or more years of their University curriculum. The purpose of these awards is to encourage and stimulate interest in the field of milk and milk products. The awards are based on scholarship, leadership, personality, need, experience, interest in and willingness to work in the field of dairy technology. These awards are made by the Committee on Scholarships and Grants-in-Aid in cooperation with the Dairy Technology Society.

Exel Scholarships. A substantial grant for endowed scholarships was made by Deborah B. Exel. These awards are made by the Committee on Scholarships to worthy students in accordance with the general principles underlying the award of all other scholarships.

Food Fair Stores Foundation Scholarships. Each year a number of scholarships is made available by the Food Fair Stores Foundation to students from Anne Arundel, Baltimore, Frederick, Montgomery, and Talbot counties and Baltimore City. Students receiving these scholarships may pursue any of the four-year curricula of the University. The scholarships are for \$250 for an academic year and are awarded by the Committee on Scholarships as in the case of all other scholarships. Under certain conditions they may be granted from year to year.

Victor Frenkil Scholarship. A scholarship of \$250 is granted annually by Mr. Victor Frenkil of Baltimore to a student from Baltimore City in the freshman class of the University. This scholarship is awarded in cooperation with the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

General Motors Scholarship. This scholarship is granted annually to any young man or young woman who is an outstanding individual entering the freshman year. The scholarship is awarded by the Committee on Scholarships. The amount of the stipend depends upon the demonstrated need of the individual. The Sponsored Scholarship Service evaluates the financial need in each case.

Goddard Memorial Scholarships. Four \$500 scholarships are available annually under the terms of the James and Sarah E. R. Goddard Memorial Fund established through the wills of Morgan E. Goddard and Mary W. Goddard. In granting these awards the Committee on Scholarships will consider

outstanding scholastic achievement and financial need. Each award will be made on a year-to-year basis depending upon the accomplishment of the student.

William Randolph Hearst Scholarships. These scholarships are made available through a gift of the *Baltimore News-Post*, one of the Hearst newspapers, in honor of William Randolph Hearst. The undergraduate scholarship of \$400 annually is open to the graduate of any high school in America. The graduate scholarship of \$600 annually is open to the graduate of any college or university in America. These scholarships are awarded for special work in the University's Program in American Civilization.

Home Economics in Business Scholarships. Eight \$100 scholarships are made available each year by Home Economics in Business, an organization of home economists in the District of Columbia, for freshmen in the College of Home Economics; they are open to any young woman who is a resident of the District of Columbia, Prince George's or Montgomery Counties in Maryland, and Arlington, Fairfax, or Loudon Counties or Alexandria in Virginia. These scholarships are awarded by the Committee on Scholarships on a competitive basis in accordance with the general principles underlying the award of all other scholarships. Unless otherwise notified, applicants should write to the Chairman, Committee on Scholarships.

Home Economics M Grants. Each year several grants are made available by Dean Marie Mount to students who enter the College of Home Economics. These grants are for varying amounts and are awarded by the Committee on Scholarships.

Interfraternity Council Scholarships. Each year the Interfraternity Council of the University provides funds for four \$200 scholarships. These annual scholarships are awarded at the discretion of the Committee on Scholarships to deserving undergraduate male students.

Iota Lambda Sigma (Nu Chapter) Scholarship. This scholarship is awarded annually to any outstanding male freshman student who enrolls in the Industrial Education curriculum. The student must be a resident of the State of Maryland and signify his intention of teaching in Maryland.

Venia M. Keller Grant. The Maryland State Council of Homemakers' Clubs makes available this grant of \$100 which is open to a Maryland young man or woman of promise who wishes to enroll or is enrolled in the College of Home Economics. It is awarded through the College of Home Economics in cooperation with the Committee on Scholarships.

Kiwanis Scholarship. A Kiwanis Memorial Scholarship of \$200 per year is awarded by the Prince George's County Kiwanis Club to a male resident of Prince George's County, Maryland, who, in addition to possessing the necessary qualifications for maintaining a satisfactory scholarship record, must have a reputation of high character and attainment in general all-around citizenship.

Helen Aletta Linthicum Scholarships. These scholarships, several in number, were established through the benefaction of the late Mrs. Helen Aletta

Linthicum, widow of the late Congressman Charles J. Linthicum, who served in Congress from the Fourth District of Maryland for many years. They are granted to worthy young men and women who are residents of the State of Maryland and who have satisfactory high school records, forceful personality, a reputation for splendid character and citizenship, and the determination to get ahead.

The M Club Grants. The M Club of the University of Maryland provides each year a limited number of awards. They are granted by the Committee on Scholarships to applicants who show promise in sports other than football.

Dr. Frank C. Marino Scholarship. Dr. Frank C. Marino provides a \$200 annual scholarship in Nursing Education. As vacancies in this scholarship occur, it is awarded by the Committee on Scholarships to a student who demonstrates special interest and promise in this field.

Maryland Educational Foundation Grants. The Maryland Educational Foundation provides funds each year for the education of several promising young men. These grants are awarded by the Committee on Scholarships to applicants who qualify under the provisions of the Foundation.

Maryland Association of Certified Public Accountants Scholarship. A \$200 scholarship is awarded to a superior student in the College of Business and Public Administration who is concentrating in Accounting. This award is made through the College of Business and Public Administration in cooperation with the Committee on Scholarships.

Maryland State Firemen's Association Scholarship. A \$300 scholarship is awarded annually to an outstanding high school student who enrolls in the Fire Protection Curriculum of the College of Engineering. This scholarship is for four years and is awarded to a student of high scholastic ability with a reputation of good character and outstanding fire service interest. The award is made by the Faculty Committee on Scholarships in cooperation with the Maryland State Firemen's Association and the Fire Protection Department of the College of Engineering.

Eugene and Agnes E. Meyer Scholarships. A number of scholarships is made available each year to promising students in meeting the costs of furthering their education, with preferential consideration to children of persons employed in public service, including service in the armed forces and the judiciary. The awards are made by the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

Miller Chemical and Fertilizer Corporation Scholarship. A \$250 scholarship has been made available for a student who needs financial aid, who has a farm background, and who has a major in Entomology, Plant Pathology, Agronomy, or Horticulture. The award is made by the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

Mortar Board Scholarship. The Mortar Board Scholarship is awarded annually to a woman student on the basis of scholastic attainment, character,

and need. The selection of the student for this award is made through the Office of the Dean of Women and a representative of Mortar Board in cooperation with the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

Panhellenic Association of Washington, D. C., Scholarship. A \$200 scholarship is awarded annually by the Panhellenic Association of Washington, D. C. This award is made to a member of a national Panhellenic Conference Sorority who in her sophomore or junior year has had a 3.0 average or better, who has done the most to promote good social relations among the sororities on the campus, and who is an outstanding leader in student affairs sponsored by the University. The award is made by the Committee on Scholarships in terms of the provisions of the grant.

Peninsula Horticultural Society Scholarship. The Peninsula Horticultural Society provides annually a \$200 scholarship to the most deserving junior or senior student, a resident of Maryland from the Eastern Shore counties, who is majoring in Horticulture or related subjects, particularly as they apply to the culture of fruits and vegetables. The award is made in cooperation with the Committee on Scholarships.

Prince Georges County Volunteer Firemen's Association Scholarship. An annual scholarship of \$300 is awarded to an outstanding high school student who enrolls in the Fire Protection Curriculum of the College of Engineering. The award is based on high scholastic ability, good character and outstanding fire service interest. The Faculty Committee on Scholarships and Grants-in-Aid cooperates with the Fire Protection Department of the College of Engineering and the Board of Directors of the Prince Georges County Volunteer Firemen's Association in selecting the student.

Mrs. Luther Ruark Memorial Scholarship. The Mrs. Luther Ruark Memorial Scholarship of \$165 is provided annually for a deserving woman undergraduate student by the Alpha Epsilon Phi Sorority in honor of Mrs. Ruark's excellent standards and high idealism as housemother of the Alpha Mu Chapter. The scholarship is awarded by the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

The Sears Roebuck Foundation Grants. Ten grants of \$200 each are provided by the Sears Roebuck Foundation to the sons of Maryland farmers who enroll in the freshman class of the College of Agriculture. One \$250 grant is awarded each year to the sophomore student in the College of Agriculture who has proved to be the outstanding student holding a Sears Roebuck grant during the previous year. These grants are awarded annually by the Committee on Scholarships.

A limited number of similar grants from the Sears Roebuck Foundation is also available for students in the College of Home Economics.

Janie G. S. Taliaferro Scholarship. Under the terms of the will of the late Janie G. S. Taliaferro a bequest has been made to the University of Maryland to provide scholarship aid to worthy students. The income of the

estate amounting to \$350 annually is used as a scholarship to a worthy young man or young woman who qualifies. The award is made by the Committee on Scholarships and Grants-in-Aid in accordance with the general principles underlying the award of all other scholarships.

Tilghman Agricultural Scholarship. The William B. Tilghman Company of Salisbury, Maryland, provides a \$1,000 scholarship, \$250 for each of four years. The scholarship is open to male students in Somerset, Wicomico, and Worcester counties who plan to enter the College of Agriculture. The student must stand in the upper half of his class during the four year period. The award is made by the Committee on Scholarships in terms of the provision of the grant. Applications may be procured through the William B. Tilghman Company.

Union Carbide and Carbon Company Scholarship. A scholarship covering tuition and fees for a senior majoring in Engineering is sponsored by the Bakelite Company. The award is made through the College of Engineering in cooperation with the Committee on Scholarships.

J. McKenny Willis and Son Grant. A grant of \$500 is made available annually by J. McKenny Willis and Son, Inc., Grain, Feed and Seed Company of Easton, Maryland, to an outstanding student in vocational agriculture in Talbot county who will matriculate in the College of Agriculture. This grant is assigned by the Committee on Scholarships in accordance with the terms of the award. Application blanks for this grant may be procured at the office of the County Superintendent of Schools of Talbot County or by writing directly to the Chairman of the Committee on Scholarships.

Washington Flour Scholarship. This scholarship, provided by the Wilkins-Rogers Milling Company of Washington, D. C., for freshmen in the College of Home Economics, covers all fees and books for one year, and is open to any student who is a resident of the District of Columbia, Prince George's or Montgomery Counties in Maryland, and Arlington, Fairfax or Loudon Counties, or Alexandria in Virginia. It is awarded annually by the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

Westinghouse Air Arm Division Scholarship. The Westinghouse Electric Corporation has established a scholarship to encourage outstanding students of engineering and the physical sciences. The scholarship is awarded to a sophomore student and is paid over a period of three years in six installments of \$250. Students in electrical or mechanical engineering, engineering physics or applied mathematics are eligible for the award. Selection of the recipient is based on achievement as reflected by scholastic standing and general college record. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Engineering.

American Bankers' Association Loan Fund. This fund provides loans of \$250 for one year only to senior or graduate students who are emphasizing Banking, Economics, or related subjects.

Catherine Moore Brinkley Loan Fund. Under the will of Catherine Moore Brinkley, a loan fund is available for worthy students who are natives and residents of Maryland, and who are studying Mechanical Engineering or Agriculture at the University.

Home Economics Loan Fund. A loan fund, established by the District of Columbia Home Economics Association, is available for students majoring in Home Economics.

Henry Strong Educational Foundation Fund. From this fund, established under the will of General Henry Strong of Chicago, an annual allotment is made to the University of Maryland at College Park for scholarship loans to young men and women students under the age of twenty-five. Recommendations for these loans are limited, in most part, to students in the junior and senior years. Only students who through stress of circumstances require financial aid and who have demonstrated excellence in educational progress are considered in making nominations to the Secretary of this fund.

STUDENT EMPLOYMENT AND SENIOR PLACEMENT

A considerable number of students earn money through employment while in attendance at the University. No student should expect, however, to earn enough to pay all of his expenses. Although earnings vary, some students earn from one fourth to three fourths of all required funds. Generally, the first year is the hardest for those desiring employment. After students have demonstrated that they are worthy and capable, there is much less difficulty in finding work.

The University assumes no responsibility in connection with employment. It does, however, make every effort to aid needy students. A list of available positions in the University and in nearby towns is placed at the disposal of students. Application for employment should be made to the Director of Student Welfare.

A placement service is also maintained to assist graduating seniors in finding employment.

HONORS AND AWARDS

Scholarship Honors. Final honors for excellence in scholarship are awarded to one fifth of the graduating class in each College. **First honors** are awarded to the upper half of this group; **second honors** to the lower half. To be eligible for honors, a student must complete at least two years of resident work at the University with an average of B (3.0) or higher.

Alpha Chi Sigma Award. The Alpha Rho Chapter of the Alpha Chi Sigma Honorary Fraternity offers annually a year's membership in the American Chemical Society to the senior majoring in Chemistry or Chemical Engineering whose average has been above 3.0 for three and one half years.

Alpha Lambda Delta Senior Certificate Award. Senior members of Alpha

Lambda Delta, honorary scholastic society, who have maintained an average of 3.5 receive this certificate.

Alpha Zeta Medal. The Honorary Agricultural Fraternity of Alpha Zeta awards annually a medal to the agricultural student in the freshman class who attains the highest average record in academic work.

American Association of University Women Award. This award is presented to a senior girl selected for scholarship and community leadership.

American Society of Civil Engineers Award. A junior membership in the American Society of Civil Engineering is awarded to the senior in the Department of Civil Engineering who has the highest scholastic standing.

Dinah Berman Memorial Medal. The Dinah Berman Memorial Medal is awarded annually to the sophomore who has attained the highest scholastic average of his class in the College of Engineering. The medal is given by Mr. Benjamin Berman.

Citizenship Prize for Men. President Emeritus H. C. Byrd, of the Class of 1908, annually presents this award to the member of the senior class who, during his collegiate career, has most nearly typified the model citizen and who has done most for the general advancement of the interests of the University.

Citizenship Prize for Women. This prize is presented annually as a memorial to Sally Sterling Byrd, by her children, to that girl member of the senior class who best exemplifies the enduring qualities of the pioneer woman. These qualities typify self dependence, courtesy, aggressiveness, modesty, capacity to achieve objectives, willingness to sacrifice for others, strength of character, and those other qualities that enabled the pioneer woman to play such a fundamental part in the building of the nation.

Bernard L. Crogier Award. The Maryland Association of Engineers awards a cash prize of twenty-five dollars annually to the senior in the College of Engineering who, in the opinion of the faculty, has made the greatest improvement in scholarship during his stay at the University.

Delta Delta Delta Medal. This sorority awards a medal annually to the girl who attains the highest average in academic work during the sophomore year.

Delta Gamma Scholarship Award. This award is offered to the woman member of the graduating class who has maintained the highest average during three and one-half years at the University.

Delta Sigma Pi Scholarship Key. This award is offered to a member of the graduating class who has maintained the highest scholastic average for the entire four-year course in the College of Business and Public Administration.

Goddard Medal. The James Douglass Goddard Memorial Medal is awarded annually to the resident of Prince George's County, born therein, who makes the highest average in his studies and who at the same time embodies the

most manly attributes. The medal is given by Mrs. Anne G. Goddard James of Washington, D. C.

Grange Award. The Maryland State Grange makes an annual award to the senior who has excelled in leadership and scholastic attainment and has contributed meritorious service to the College of Agriculture.

Mahlon N. Haines Art Award. An award of one hundred dollars is presented each year to the students in the Department of Fine Arts for outstanding work in the painting classes.

Charles B. Hale Dramatic Awards. The University Theatre recognizes annually the man and woman members of the senior class who have done most for the advancement of dramatics at the University.

Maryland Motor Truck Association Award. A five hundred dollar award is made to a student majoring in Transportation with an interest in motor transportation who has shown in three years of training an apparent ability to succeed. This award is made through the College of Business and Public Administration.

Omicron Nu Sorority Medal. This honorary sorority awards a medal annually to the freshman girl in the College of Home Economics who attains the highest scholastic average during the first semester.

Phi Alpha Award. Epsilon Chapter of Phi Alpha Fraternity awards annually a plaque to the man in the junior class who has attained the highest scholastic average during his first two years at the College Park colleges of the University.

Pilot Freight Carriers, Inc., Award. A five hundred dollar award is made to a senior student in the College of Business and Public Administration who has majored in Transportation and who has demonstrated competence in this field of study. This award is made through the College of Business and Public Administration.

Pi Sigma Alpha—Fred Hays Memorial Award. This award, consisting of the sum of thirty dollars, is presented by an alumnus to the senior in Government and Politics having the highest average in departmental courses.

William S. Rosenbaum Memorial Foundation Award. This award, consisting of twenty-five dollars, is presented for excellence in Hebrew studies by Barbarossa Lodge 133, Knights of Pythias, Philadelphia, Pennsylvania.

Sigma Alpha Omicron Award. This award is presented to a senior student majoring in Bacteriology for high scholarship, character and leadership.

Sigma Chi Cup. Sigma Chi Fraternity offers annually a cup to the man in the freshman class who has made the highest scholastic average during the first semester.

Algernon Sydney Sullivan Award. The New York Southern Society, in memory of its first president, awards annually medallions and certificates to one man and one woman of the graduating class and one non-student who

evinced in their daily life a spirit of love for and helpfulness to other men and women.

Tau Beta Pi Award. The Maryland Beta Chapter of Tau Beta Pi, an honorary fraternity, awards annually an engineer's handbook to the junior in the College of Engineering who during his sophomore year has made the greatest improvement in scholarship over that of his freshman year.

Washington Panhellenic Association Award. The sum of two hundred dollars is presented to a woman student, a member of a National Panhellenic Conference Sorority, who has done most to promote social relations among the sororities on the campus.

MILITARY AWARDS

Air Force Association Medal. This silver medal is awarded to the outstanding advanced cadet in the A.F.R.O.T.C. course who has demonstrated outstanding ability in scholastic grades, both general and military, in individual characteristics, and in performance during the period of summer camp.

Alumni Cup. The Alumni Association offers each year a cup to the Leader of the best drilled Flight in competitive drill.

American Legion Post No. 217 Award. This award is presented to the senior advanced cadet who displays outstanding leadership.

American Legion Gold Medal. This gold medal is awarded to the senior advanced cadet for academic achievement in leadership.

Armed Forces Communications Medal. This medal is awarded to the senior advanced cadet in recognition of outstanding achievement in the field of electronics.

Arnold Air Society Plaque. This plaque is awarded to the second year advanced cadet who has done the most to advance the A.F.R.O.T.C. interests and activities for the Arnold Air Society.

Consolidated Vultee Aircraft Corporation Award. This award is presented to the sophomore cadet displaying leadership ability and academic excellence.

Disabled American Veterans' Gold Cup. This cup is awarded to the senior advanced cadet who has displayed outstanding leadership, scholarship, and citizenship.

Distinguished Military Student Awards. These awards are presented to senior cadets who have been outstanding in A.F.R.O.T.C. and who are outstanding in their academic major fields.

Governor's Cup. This cup is offered each year by His Excellency, the Governor of Maryland, to the best drilled squadron.

Hamill Memorial Plaque. This plaque, offered by the local chapter of Theta Chi Fraternity, is presented to the sophomore cadet excelling in leadership and scholarship.

Glenn L. Martin Aeronautical Engineering Award. This award is presented for academic excellence in the field of aeronautical engineering to a senior advanced cadet who has applied for flight training.

Maryland State Society Daughters of Founders and Patriots of America Award. This award is presented to the freshman cadet attaining the highest over-all academic grades.

National Defense Transportation Association Award. This organization offers a citation in recognition of leadership qualities, academic standing, aptitude for military service, and noteworthy service in furtherance of the aims and objectives of the Association in promoting preparedness for the national defense of the United States.

Pershing Rifle Award. The Pershing Rifle Company presents a medal to the best drilled cadet who is not a member of the Pershing Rifles.

Pershing Rifle Medal. This medal is awarded to the outstanding member of the Pershing Rifles.

Reserve Officers' Association Medals. Three medals, gold, silver, and bronze, are presented by this association to the three senior cadets demonstrating outstanding academic achievement in the A.F.R.O.T.C. and in other studies.

Reserve Officers' Association Ribbons. The Air Force Reserve Officers' Association presents ribbons to the five outstanding freshman cadets, the five outstanding sophomore cadets, and to members of the best drilled squad.

Scabbard and Blade Coblenz Memorial Cup. This cup awarded to the Commander of the winning Squadron in drill competition.

Sons of the American Revolution Award. This award is presented to the senior Advanced Cadet who exhibits in his work a high degree of merit with respect to leadership, military bearing, and excellence in his academic course of study.

Sun Newspaper Award. This award is presented to a basic cadet in recognition of being the best drilled basic cadet in competitive drill.

ATHLETIC AWARDS

Tom Birmingham Memorial Trophy. This trophy, awarded by Major Benny Alperstein and Major Hotsy Alperstein in memory of the late Tom Birmingham, of the Class of 1937, is presented to the outstanding member of the boxing team.

William P. Cole, III, Memorial Lacrosse Award. This award, offered by the teammates of William P. Cole, III and the coaches of the 1940 National Champion team, is presented to the outstanding midfielder.

Halbert K. Evans Memorial Track Award. This award, given in memory of "Hermie" Evans, of the Class of 1940, by his friends, is presented to the outstanding graduating senior trackman.

Charles Leroy Mackert Trophy. This trophy is offered by William E. Krouse to the Maryland student who has contributed most to wrestling while at the University.

Maryland Ring. The Maryland Ring is offered as a memorial to Charles L. Linhardt, of the Class of 1912, to the Maryland man who is adjudged the best athlete of the year.

Anthony C. Nardo Memorial Trophy. This trophy is awarded to the best football lineman of the year.

Edwin Powell Trophy. This trophy is offered by the Class of 1913 to the player who has rendered the greatest service to lacrosse during the year.

Silvester Watch for Excellence in Athletics. A gold watch, given in honor of former President of the University R. W. Silvester, is offered annually to "the man who typifies the best in college athletics."

Teke Trophy. This trophy is offered by the Maryland Chapter of Tau Kappa Epsilon Fraternity to the student who during his four years at the University has rendered the greatest service to football.

Dixie Walker Memorial Trophy. This trophy, offered by Theta Chi Fraternity, is awarded to the boxer who has shown the most improvement over his performance in preceding years.

STUDENT GOVERNMENT AWARDS

Medals are awarded to members of the Executive Committee of the Student Government Association who faithfully perform their duties throughout the year.

REGULATION OF STUDIES

Schedule of Classes. A schedule of classes, giving days, hours, and rooms, is issued as a separate pamphlet at the beginning of each semester. Classes are scheduled to begin at 8:00 A. M. Instructions concerning registration procedures are given in the *Schedule of Classes*.

Definition of Credit Unit. The semester hour, which is the unit of credit in the University, is the equivalent of a subject pursued one period a week for one semester. Two or three periods of laboratory or field work are equivalent to one lecture or recitation period.

Examinations. Examinations are held at the end of each semester in accordance with the official schedule. Students are required to use the prescribed examination book during final examinations and tests if requested by the instructor.

Marking System. The following symbols are used for marks: A, B, C, and D, passing; F, failure; I, incomplete. Mark A denotes superior scholarship; mark B, good scholarship; mark C, fair scholarship; and mark D, passing scholarship. At the graduate level, the grade of D is failure.

A mark of X will be used on records of off-campus adult students in those cases where such a student has ceased to attend a class without an official withdrawal. A mark of X indicates no record, no prejudice, is terminal, and may not be later changed as in the case of the incomplete mark of I.

In computing scholarship averages, the following numerical values are used: A—4; B—3; C—2; D—1; F—0.

Academic Regulations. A separate pamphlet entitled *Academic Regulations* is published each year, listing the regulations which govern the academic work and other activities of students.

Grade Reports. Written reports of grades are sent by the Registrar at the close of the semester to parents or guardians of minor students who are not veterans.

Junior Standing. The requirement for junior standing is, in addition to the required military and physical education courses, fifty-six (56) semester hours of academic credit, the whole program to be completed with an average grade of C.

Delinquent Students. A student must attain passing marks in fifty per cent of the semester hours for which he is registered, or he is automatically dropped from the University. The Registrar notifies the student, his parent or guardian, and the student's Dean of this action. A student who has been dropped for scholastic reasons may appeal in writing to the Admissions Petition Board for reinstatement. The Board is empowered to make adjustments when desirable and when in accordance with policies governing reinstatement as published in *Academic Regulations*.

The University reserves the right to request at any time the withdrawal of a student who cannot or does not maintain the required standard of scholarship, or whose continuance in the University would be detrimental to his or her health, or to the health of others, or whose conduct is not satisfactory to the authorities of the University. Students of the last class may be asked to withdraw even though no specific charge be made against them.

According to University regulations, excessive absence from any course is penalized by failure in the course. Students who are guilty of persistent absence from any course will be reported to the President or to his appointed representative for final disciplinary action.

LIVING ARRANGEMENTS

Dormitories

1. Room Reservations. All new students desiring to room in the dormitories should request room application cards by so indicating on their applications for admission. The Director of Admissions will refer these applications to the offices of the Dean of Men or the Dean of Women. Application cards or blanks will be sent to applicants and should be promptly returned to the proper office. A fee of \$25.00 will be required, which will be deducted from the first semester room charges when the student registers. A

room is not assured until notice from the Dean concerned is received. Room reservations not claimed by freshmen and upperclassmen on their respective registration days will be cancelled. A room will be held by special request until after classes begin providing the dormitory offices are notified by the first day of registration. Room reservation fees will not be refunded if the cancellation is received later than July 15 for the first semester.

2. Applications for rooms are acted upon only when a student has been fully admitted academically to the University.

3. (a) All undergraduate women except those who live at home or with close relatives are required to room in the University dormitories.

(b) All male freshmen except those who live at home or with close relatives are required to room in the University dormitories when accommodations are available.

4. Reservations by students in attendance at the University will be made during the last two weeks before the close of the spring semester. New students are urged to attend to their housing arrangements about three months in advance of registration. It is understood that all housing and board arrangements which are made for the fall semester are binding for the spring semester.

Room and board charges begin with the evening meal prior to the first day of the registration period and include the last day of classes for each semester, with the exception of the Christmas recess and the Easter recess. Students unable to make other arrangements for the holidays may consult the Dean of Men or the Dean of Women for assistance.

Equipment. Students assigned to the dormitories should provide themselves with sufficient single blankets, sheets, pillow cases, towels, a pillow, a laundry bag, a waste paper basket and a study lamp. The individual student assumes responsibility for all dormitory property assigned to him. Any damage done to the property, other than that which results from ordinary wear and tear, will be charged to the student concerned. Where individual responsibility for damage cannot be ascertained, the amount of the damage will be prorated among the occupants of the room or the dormitory in which the damage occurred.

Each student will be furnished with a key for his room, for which a deposit of \$1.00 will be made. The deposit will be returned in exchange for the key at the end of the student's stay at the University dormitory.

Laundry. The University does not provide laundry service. Each student is responsible for his or her own laundry. There are several reliable laundry concerns in College Park, or if a student prefers, he may send his laundry home. It is also possible to make arrangements to rent towels and bed linens. Students may do laundry (not including bed linens) in the laundry rooms which are located in each dormitory.

Personal Baggage. Baggage sent via the American Express and marked

with the college housing address will be delivered when the student notifies the College Park Express Office of his arrival.

Off-Campus Housing

1. Men: Only upperclassmen and veterans are allowed to live in houses off the campus. A list of "off campus" rooms is available in the Office of the Dean of Men.

2. Women: All housing arrangements for undergraduate women students must be approved by the Office of the Dean of Women.

Estimated Expenses of "Off-Campus" Residence

Most of the "off campus" houses have double rooms with twin beds and provide linens and towels. Some require the students to furnish their own bed linens. The price for a person in a double room is about \$25.00 a month.

Meals

1. All students who live in University dormitories must board at the University Dining Hall. No special diets may be furnished. Three meals are served daily and two on Sunday.

2. Other students may make arrangements to board by the semester at the Dining Hall. Eating establishments are available in College Park. Lunches on school days may be obtained at the University cafeteria. Lunches, breakfast and Sunday suppers may be obtained at the Student Union.

3. No rebate is made for meals not eaten at the University Dining Hall or in other places where board is paid for in advance.

STUDENT LIFE AND WELFARE

RELIGIOUS INFLUENCES

The University recognizes its responsibility for the welfare of the students, not solely in their intellectual growth, but as human personalities whose development along all lines, including the moral and religious, is included in the educational process. Pastors representing the major denominational bodies assume responsibility for work with the students of their respective faiths and have offices in the University Chapel. The chapel, one of the most beautiful structures of its kind, is on the campus for the use of all faiths. Church attendance is encouraged.

A faculty committee on religious affairs and social service has as its principal function the stimulation of religious thought and activity on the campus. It brings noted speakers on religious subjects to the campus from time to time. The committee cooperates with the Student Religious Council and the student pastors and assists the student denominational clubs in every way that it can. Opportunities are provided for students to consult with pastors representing the denominations of their choice.

While there is no attempt to interfere with anyone's religious beliefs, the importance of religion is recognized officially and religious activities are encouraged.

Denominational Clubs. Several religious clubs have been organized among the students for their mutual benefit and for participation in certain types of service. This year the list includes the Baptist Student Union, the Canterbury Club (Episcopal), Channing Fellowship (Unitarian), the Christian Science Club, the Friends' University Group, the Greek Orthodox Club, the Hillel Foundation (Jewish), Islamic Club, the Lutheran Club, the Maryland Christian Fellowship, the Newman Club (Catholic), the Wesley Foundation (Methodist), and the Westminster Foundation (Presbyterian). These clubs meet regularly for worship and discussion, and occasionally for social purposes. A pastor or a member of the faculty serves as adviser.

COUNSELING AND GUIDANCE

Office of the Dean of Men. The office of the Dean of Men exists for the purpose of furnishing friendly counsel and helpful guidance to male students in connection with any of their personal problems, especially those related to social adjustment, financial need, employment, housing, etc. This office also handles for male students matters of discipline and infringement of University regulations.

Office of the Dean of Women. The Office of the Dean of Women exists to furnish friendly counsel and helpful guidance to women students in connection with their adjustment to college and with their personal problems. In addition, this office coordinates women's activities, approves chaperones for social functions, regulates sorority rushing in cooperation with the Panhellenic Association, and advises the Women's Student Government Association. It has supervision over all housing accommodations for women students, whether on or off campus. A personal interview with one of the members of the staff is required of every woman student on entering and on leaving the University. All women students are invited to avail themselves of the services of this office.

University Counseling Center. The University maintains a center where all students are encouraged to go for individual assistance on their vocational choices, personal problems, and educational progress. The University Counseling Center has a professionally qualified staff and has available an extensive selection of diagnostic devices for the analysis of interests, abilities, aptitudes, and adjustment. By virtue of the payment of the annual Advisory and Testing Fee all students are entitled to the professional services of this center without further charge.

STUDENT HEALTH

The University recognizes its responsibility for safeguarding the health of its student body and takes every reasonable precaution toward this end. All new undergraduate students are required to have a thorough physical exami-

nation at the time of their entrance into the University. A well-equipped infirmary is available for the care of sick or injured students. A small fee is charged undergraduate students for this infirmary service, but this fee does not include expensive drugs and special diagnostic procedures. Graduate students may secure this service by paying the Infirmary fee.

Infirmary Service

1. All undergraduate students and graduate students paying the fee, may receive dispensary service and medical advice at the infirmary during office hours established by the physician in charge.

2. A registered nurse is on duty at all hours in the Infirmary for student care. Students are required to report illnesses during doctors' office hours unless the case is an emergency.

3. Students entitled to infirmary service and not residing in their own homes may, upon order of the University physician, be admitted to the Infirmary and cared for to the extent of the facilities available. Students living off the campus will be charged a subsistence fee. In case of illness requiring a special nurse, consultations, expensive drugs, x-rays or special tests, the extra expense must be borne by the student.

4. Students living in dormitories, fraternity houses, sorority houses, or "off campus" houses who are too ill to go to the Infirmary must notify their housemother, proctor or householder, who in turn will notify the Infirmary. In all cases except emergencies, the physician in charge must be notified during office hours.

5. When a student is admitted to the Infirmary and the illness is of a serious nature, parents will be promptly informed of the admission and of the progress of the student's condition. Visiting hours are 10 A. M. to 11 A. M. and 7 P. M. to 7:30 P. M. daily. Each patient is allowed only three visitors at one time. No visitor may see any patient until permission is granted by the doctor or nurse in charge.

6. Hospitalization is not available at the Infirmary for faculty, graduate students, or employees. Emergency dispensary service, however, is available for faculty, graduate students, and employees who are injured in University service or University activities.

Public Health. All dormitories, "off campus" houses, sorority, and fraternity houses are inspected periodically by the Student Health Service to insure that proper sanitary conditions are maintained and that kitchens meet the prescribed standards for cleanliness and sanitation. All food handlers will be examined in accordance with directives issued by the Student Health Service.

Insurance. Group Accident Insurance furnished by a national company is available on a voluntary basis. Details and rates will be mailed to all students prior to registration.

ATHLETICS AND RECREATION

The University recognizes the importance of the physical development of

all students and, in addition to the required physical education for freshman and sophomores, sponsors a comprehensive intercollegiate and intramural program. Students are encouraged to participate in competitive athletics and to learn the skill of games that may be carried on after leaving college. The intramural program, which covers a large variety of sports, is conducted by the Physical Education Department for both men and women.

The Council on Intercollegiate Athletics sponsors and supervises a full program of intercollegiate athletics in every form necessary to meet the needs of the student body. By keeping this program in proper bounds, it becomes an incidental feature of University life. Each student is encouraged to participate in the program, either as an athlete or as a spectator. A strong intercollegiate program creates the incentives for extensive participation in the intramural program and, further, the program furnishes a rallying point of common interest for students, alumni, and faculty.

The University is a member of the Atlantic Coast Conference, the National Collegiate Athletic Association, the United States Intercollegiate Lacrosse Association, the Intercollegiate Amateur Athletic Association of America, and cooperates with other national organizations in the promotion of amateur athletics.

The University has an activities building which contains a modern gymnasium, a swimming pool, training facilities for indoor sports, physical education laboratories, and an arena; a large armory; a modern stadium with a running track; a number of athletic fields; tennis courts; baseball diamonds; and a gymnasium and swimming pool for women.

EXTRA-CURRICULAR STUDENT ACTIVITIES

The following description of student activities covers those of the undergraduate divisions at College Park. The catalogs of the Baltimore Schools also include descriptions of student activities.

Regulation of Student Activities. The association of students in organized bodies for the purpose of carrying on voluntary student activities in orderly and productive ways is recognized and encouraged. All organized student activities are under the supervision of the Committee on Student Life and Activities. Such organizations are formed only with the consent of the Committee on Student Life and Activities and the approval of the President. Without such consent and approval no student organization which in any way represents the University before the public, or which purports to be a University organization or an organization of University students, may use the name of the University in connection with its own name, or in connection with its members as students.

Student Government

The Student Government Association consists of all the students and is the instrument for student government. It operates under an approved constitution and bylaws. Its officers are the president, vice president, secretary, and treasurer.

Executive Council

The Executive Council is the over-all student governing body which performs the executive duties incident to managing student affairs and works in cooperation with the Committee on Student Life and Activities. It consists of seventeen student members representing the various phases of University life.

Associated Women Students

The Associated Women Students, in cooperation with the Office of the Dean of Women, handles matters pertaining to women students.

Men's League

The Men's League, in cooperation with the Office of the Dean of Men, handles matters pertaining to men students.

Committee on Student Life and Activities

The Committee on Student Life and Activities, a faculty committee having student membership, keeps in close touch with all conditions and activities, excepting classroom work, that affect the student and, acting in an advisory capacity, endeavors to improve any unsatisfactory conditions that may exist.

Two pamphlets, *Academic Regulations*, and *General Regulations*, issued annually and distributed to the students in the fall, contain full information concerning student matters as well as a statement of the rules of the University.

Eligibility to Represent the University. Only students in good standing are eligible to represent the University in extra-curricular activities. In addition various student organizations have established certain other requirements. To compete in varsity athletics a student must pass the required number of hours as determined by the Athletic Council.

Discipline. In the government of the University, the President and faculty rely chiefly upon the sense of responsibility of the students. The student who pursues his studies diligently, attends classes regularly, lives honorably, and maintains good behavior meets this responsibility. In the interest of the general welfare of the University, those who fail to maintain these standards are asked to withdraw. Students are under the direct supervision of the University only when on the campus or attending an approved function representing the University. They are responsible to the University for their conduct wherever they may be.

FRATERNITIES, SORORITIES, SOCIETIES, AND CLUBS

Honorary Fraternities, Sororities, and Societies. Honorary fraternities, sororities, and societies in the University are organized to uphold scholastic and cultural standards.

National Honorary Fraternities and Societies. The national honorary fraternities and societies encouraging development in specialized endeavor are: Alpha Lambda Delta, freshman women's scholarship; Beta Gamma Sigma, commerce; Mortar Board, senior women's honor society recognizing service, leadership and scholarship; Omicron Delta Kappa, men's honor society recognizing conspicuous attainment in extra-curricular activities and general leadership; Omicron Nu, home economics; Phi Alpha Theta, history; Phi Eta Sigma, freshman men's scholarship; Phi Kappa Phi, senior scholarship for both men and women, recognizing honor students in all branches of learning; Pi Tau Sigma, mechanical engineering; Sigma Pi Sigma, physics; Sigma Xi, graduate scientific research; and Tau Beta Pi, general engineering.

National Professional Fraternities and Societies. The national professional fraternities and societies which encourage high scholarship, professional research and advancement of professional ethics are: Alpha Chi Sigma, chemistry; Alpha Zeta, agriculture; Beta Alpha Psi, accounting; Delta Sigma Pi, business; Iota Lambda Sigma, industrial education; Phi Delta Kappa, men's education; Phi Chi Theta, women's business; Pi Alpha Xi, floriculture; Phi Mu Epsilon, mathematics; Sigma Alpha Eta, speech and hearing therapy; Sigma Alpha Omicron, bacteriology; and Sigma Delta Chi, journalism.

National Recognition Societies. The national recognition societies which promote achievement in various fields of activity are: Alpha Kappa Delta, men's sociology; Arnold Air Society, Air Force R.O.T.C.; Kappa Kappa Psi, men's band; National Collegiate Players, dramatics; Pershing Rifles, basic R.O.T.C.; Pi Delta Epsilon, journalism; Pi Sigma Alpha, political science; Psi Chi, psychology; Scabbard and Blade, military; and Tau Beta Sigma, women's band.

Local Honor Societies. Diamond, panhellenic; Electrical Engineering Honor Society; Phi Alpha Epsilon, physical education; Sigma Tau Epsilon, women's recreation; Vandenberg Guard, Air Force R.O.T.C.; and the Varsity M Club, athletics.

Social Fraternities and Sororities. There are twenty-four national fraternities and sixteen national sororities at College Park. These in the order of their establishment at the University are Kappa Alpha, Sigma Nu, Phi Sigma Kappa, Delta Sigma Phi, Alpha Gamma Rho, Theta Chi, Phi Alpha, Tau Epsilon Phi, Alpha Tau Omega, Phi Delta Theta, Lambda Chi Alpha, Sigma Alpha Mu, Alpha Epsilon Pi, Phi Kappa Sigma, Sigma Chi, Sigma Alpha Epsilon, Tau Kappa Epsilon, Zeta Beta Tau, Delta Tau Delta, Sigma Pi, Sigma Phi Epsilon, Phi Kappa Tau, Delta Kappa Epsilon and Pi Kappa Alpha, national fraternities; Alpha Omicron Pi, Kappa Kappa Gamma, Kappa Delta, Delta Delta Delta, Alpha Xi Delta, Phi Sigma Sigma, Alpha Delta Pi, Sigma Kappa, Gamma Phi Beta, Alpha Epsilon Phi, Pi Beta Phi, Delta Gamma, Kappa Alpha Theta, Alpha Gamma Delta, Alpha Chi Omega, and Sigma Delta Tau, national sororities.

Clubs and Societies. Many clubs and societies, with literary, art, cultural, scientific, social, and other special objectives are maintained in the University.

Some of these are purely student organizations; others are conducted jointly by students and members of the faculty. The list follows:

Civic and Service Organizations. Alpha Phi Omega, national service fraternity; Daydodgers' Club; Gamma Sigma Sigma, national service sorority; Graduate Club; Independent Students' Association; Interfraternity Council; Interfraternity Pledge Council; Junior Panhellenic Council; Latch Key Society; Mr. and Mrs. Club; Panhellenic Council; and the Student Unit of the American Red Cross.

Subject Matter Organizations. Accounting Club, Agricultural Student Council, Agricultural Economics Club, American Institute of Chemical Engineers, American Institute of Electrical Engineers and Institute of Radio Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers, Angel Flight (ROTC), Block and Bridle Club, Childhood Education Club, Chinese Students' Club, Collegiate 4-H Club, Dairy Science Club, Economics Discussion Club, Engineering Student Council, French Club, Future Farmers of America, German Club, Government and Politics Club, Home Economics Club, Industrial Education Association, Institute of Aeronautical Sciences, Institute of Food Technology, International Club, International Relations Club, Louisa Parsons Nursing Club, Maryland Poultry Science Club, Music Educators National Conference, Philosophy Club, Plant Industry Club, Propellor Club, Radio and TV Guild, Society for the Advancement of Management, Sociology Club, Spanish Club, Student Affiliates of the American Chemical Society, Student Marketing Association, Veterinary Science Club, Women's Professional Club (Physical Education), Women's Recreation Association, and Young Democrats Club.

Recreational Organizations. Amateur Radio Club (W3EAX), Aqualiners' Club, Astronomy Club, Calvert Debate Society, Campus Conjurors, Chapel Choir, Chess Club, Clef and Key, Creative Dance Club, Driver Training Club, Gymkana Troupe, Judo Club, Maryland Flying Association, Men's Glee Club, Riding Club, Rossborough Club (large campus dances), Sailing Club, Ski Club, Skin Diving Club, Terrapin Trail Club, University Art Club, University Orchestra, University Theatre, WMUC Radio Station, Weightlifting Club, and the Women's Chorus.

UNIVERSITY AND A. F. R. O. T. C. BANDS

The University of Maryland Student Band and the A.F.R.O.T.C. Band are two separate musical organizations at the University, existing for the purpose of furthering the musical knowledge of interested students. The A. F. R. O. T. C. Band functions under the College of Military Science. The Student Band is under the direction of the Music Department and is assisted by the Military Department. Students are not required to be members of the University of Maryland Band in order to be eligible for the Air Force R. O. T. C. Band. The instruction of both bands is conducted by an experienced bandmaster.

STUDENT PUBLICATIONS

Four student publications are conducted under the guidance of a faculty adviser and the general supervision of the Committee on Student Publications and Communications. The *Diamondback*, a newspaper, summarizes the University news and provides a medium for the discussion of matters of interest to the students and the faculty. The *Terrapin*, the yearbook, is a reflection of campus activities, serving to commemorate the principal events of the college year. The *Old Line* is a magazine of literature, humor and art, published periodically. The *M Book* is a handbook for incoming students and is designed to acquaint them with University life.

STUDENTS' SUPPLY STORE

For the convenience of students, the University maintains a Students' Supply Store, located in the basement of the Student Union Building, where students may obtain at reasonable prices textbooks, classroom materials and equipment. The store also carries jewelry, stationery, fountain pens and novelty items. This store is operated on a basis of furnishing students needed books and supplies at as low a cost as practicable, and profits, if any, are turned into the general University treasury to be used for promoting general student welfare. Because of heavy demand for textbooks at the beginning of each semester, the student should purchase required textbooks during registration week.

UNIVERSITY POST OFFICE

The University operates an office for the reception, dispatch, and delivery of United States mail including Parcel Post packages, and for inter-office communications. This office is located in the basement of the Student Union Building. The campus post office is NOT A PART OF THE UNITED STATES POSTAL SYSTEM and no facilities are available for sending or receiving postal money orders. Postage stamps, however, may be purchased. United States mail is received at 8:30 A.M. and 3:15 P.M. and dispatched at 11:15 A.M. and 3:45 P.M. daily, except that on Saturdays, mail is dispatched at 11:15 A.M. only. Special schedules are announced for University departments at holiday periods. Only University official, registered and insured incoming and outgoing mail is handled by the University Post Office. Students pick up all registered and insured mail at the College Park Post Office.

Each student in the University is assigned a Post Office box at the time of registration, for which a small fee is charged. Also, boxes are provided for the various University offices. Students may have access to their Post Office boxes from 7:30 A.M. to 9:00 P.M. One of the major reasons for the operation of the Post Office is to provide a convenient method by which deans, teachers and University officials may communicate with students. Students are therefore expected to call for their mail daily, if possible, in order that such communications may come to their attention promptly.

It will be the responsibility of fraternities, sororities, and all clubs which mail more than ten pieces of mail at one time, intended for students, to insert their own mail, after obtaining permission from the Postmaster.

ALUMNI

The Alumni Council, composed of representatives from the schools and colleges of the University—one from the M Club and one from each area Alumni Club—coordinates all general alumni interests and activities. The Council membership includes three representatives from each of the organized alumni associations for the Schools and Colleges of Agriculture, Arts and Sciences, Business and Public Administration, Dentistry, Education, Engineering, Home Economics, Law, Medicine, Nursing and Pharmacy.

Council activities include the alumni publication, *Maryland*; a scholarship program; and an annual Homecoming at College Park. Membership in the University of Maryland Alumni Association is automatic through affiliation with one of the school and college organizations. Each school and college Alumni Association exerts an active interest in the welfare of its respective graduates and of the University. Objectives of the general Association include the promotion of the interests and welfare of the University and efforts to further mutually beneficial relations between the University, the people of Maryland, and the alumni.

Maryland, a bi-monthly magazine issued by the Alumni Association, publishes articles of general interest, feature articles written by faculty members and alumni, campus news, and sports news.

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EDUCATION

“**E**DUCATION does not mean teaching people what they do not know. It means teaching them to behave as they do not behave. It is not teaching the youth the shapes of the letters and the tricks of numbers, and then leaving them to turn their arithmetic to roguery and their literature to lust. It means, on the contrary, training them into the perfect exercise and kingly continence of their bodies and souls. It is painful, continual and difficult work to be done by kindness, by watching, by warning, by precedent, and by praise, but above all—by example.”—John Ruskin.

“In our country no man is worthy the honored name of statesman, who does not include the highest practicable education of the people in all his plans of administration.”—Horace Mann.

“Promote, then, as an object of primary importance institutions for the general diffusion of knowledge. In proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened.”—George Washington.

“The good education of youth has been esteemed by wise men in all ages as the surest foundation of the happiness both of private families and of commonwealths.”—Benjamin Franklin.

“The whole people must take upon themselves the education of the whole people and be willing to bear the expense of it.”—John Adams.

“If a nation expects to be ignorant and free in a state of civilization, it expects what never was and never will be.”—Thomas Jefferson.

“A popular government without popular information or the means of acquiring it, is but the prologue to a farce or a tragedy, or perhaps both.”

James Madison

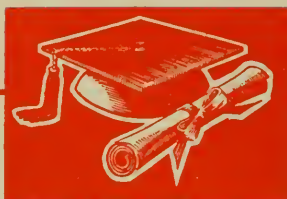
“An educated man is never poor and no gift is more precious than education.”—Abraham Lincoln.

“Without popular education no government which rests on popular action can long endure; the people must be schooled in the knowledge and in the virtues upon which the maintenance and success of free institutions depend.”

—Woodrow Wilson

“We have faith in education as the foundation of democratic government.”

—Franklin D. Roosevelt



SEPARATE CATALOGS

At College Park

Individual catalogs of colleges and schools of the University of Maryland at College Park may be obtained by addressing the Office of University Relations, University of Maryland, College Park, Md.

These catalogs and schools are:

- 1. General Information
- 2. College of Agriculture
- 3. College of Arts and Sciences
4. College of Business and Public Administration
- 5. College of Education
- 6. College of Engineering
- 7. College of Home Economics
8. College of Military Science
9. College of Physical Education, Recreation and Health
10. College of Special and Continuation Studies
- 11. Summer School
12. Graduate School

At Baltimore

Individual catalogs for the professional schools of the University of Maryland may be obtained by addressing the Deans of the respective schools at the University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland. The professional schools are:

13. School of Dentistry
14. School of Law
15. School of Medicine
16. School of Pharmacy
17. School of Nursing

At Heidelberg

The catalog of the European Program may be obtained by addressing the Dean, College of Special and Continuation Studies, College Park, Maryland.

1957-1958



UNIVERSITY OF MARYLAND

THE COLLEGE OF

agriculture

AT COLLEGE PARK



IMPORTANT

THE PROVISIONS of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

GENERAL INFORMATION

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, societies and special clubs, the University band, student publications, University Post Office and Supply Store, write to the Editor of Publications for the General Information issue of the Catalog.

See Outside Back Cover for List of Other Catalogs
Index on inside back cover.

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Number 17

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Re-entered at the Post Office in College Park, Maryland, as second class mail matter under the Act of Congress of August 24, 1912.



BOARD OF REGENTS
AND

MARYLAND STATE BOARD OF AGRICULTURE

*Term
Expires*

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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

A regular meeting of the Board is held the last Friday in each month, except during the months of July and August.

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B.A., University of Texas, 1932; M.A., 1932; B.Litt., Oxford University, 1936; D.Phil., 1936.

ALBIN O. KUHN, Assistant to the President of the University.

B.S., University of Maryland, 1938; M.S., 1939; Ph.D., 1948.

ALVIN E. CORMENY, Assistant to the President, in charge of Endowment and Development.

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

HARRY C. BYRD, President Emeritus, University of Maryland.

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.Sc., Western Maryland College, 1938.

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B.S., Ohio State University, 1916; M.A. Columbia University, 1917; Ph.D., American University, 1930.

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B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; Ph.D., Columbia University, 1931.

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B.S., Cornell University, 1936; M.S., 1938; Ph.D., 1940.

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B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

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B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.

LEON P. SMITH, Dean of the College of Arts and Sciences.

B.A., Emory University, 1919; M.A., University of Chicago, 1928; Ph.D., 1930; Diplome le l'Institut de Touraine, 1932.

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Ph.E., University of Chicago, 1917; M.A., 1918; Ph.D., 1925.

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B.S., University of Minnesota, 1930; M.A., 1936; Ph.D., University of Colorado, 1942.

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B.E., Cooper Union School of Engineering, 1910; C.E., 1913; Registered Professional Engineer.

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B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; Ph.D., Yale University, 1917; D.Sc. (hon.), Ohio Northern University, 1927.

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B.A., University of Indiana, 1916; M.A., Columbia Teachers College, 1924.

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B.A., Johns Hopkins University, 1914; Ph.D., 1917; LL.B., University of Maryland, 1917.

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B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; Ph.D., (hon.), University of Louisville, 1946.

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B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; Ed.D., University of Maryland, 1952.

CLIFFORD G. BLITCH, Director of the University Hospital.

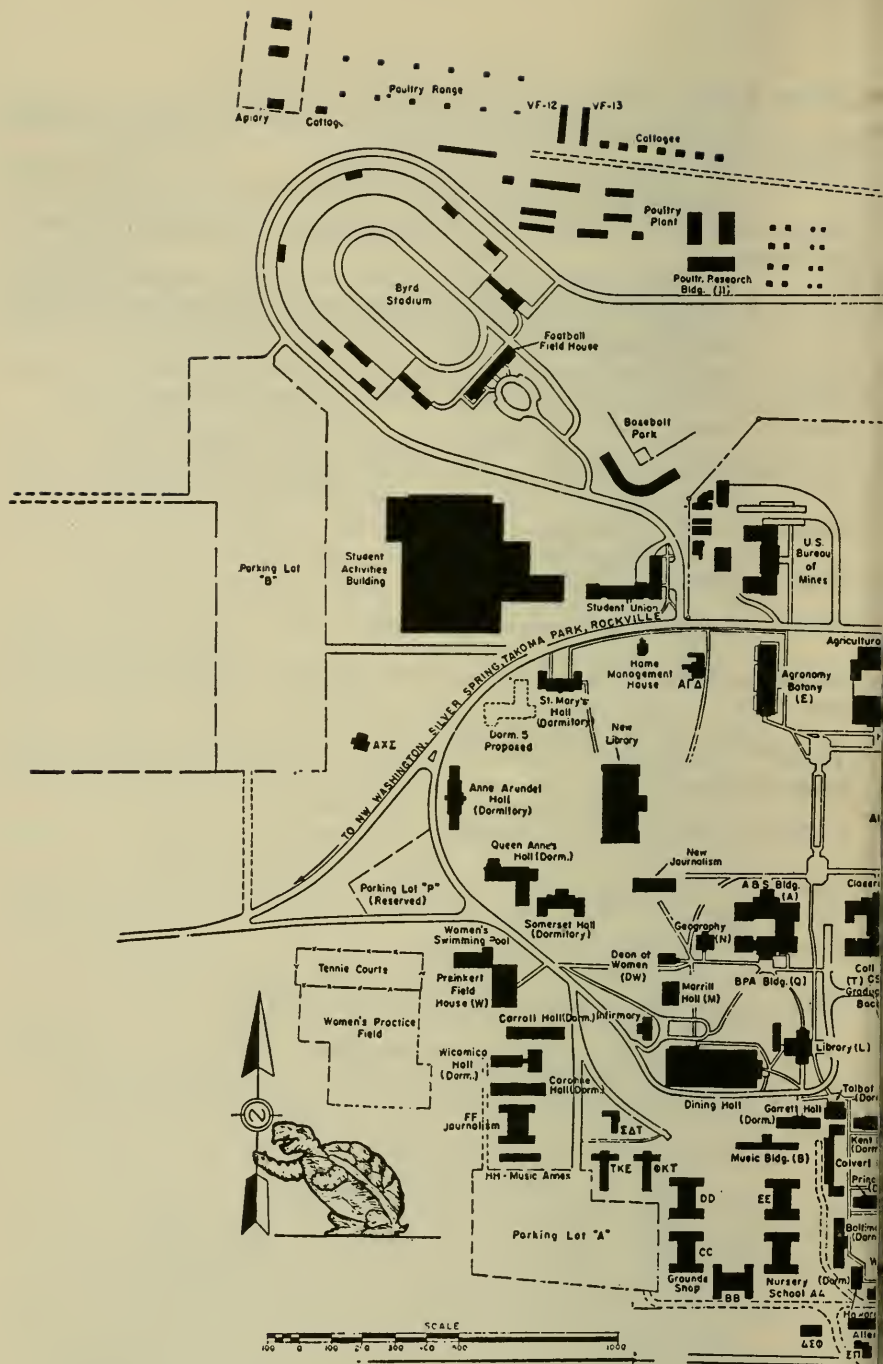
M.D., Vanderbilt University Medical School, 1928.

*Resigned January 31, 1957.

- EDWARD BARBER**, Dean of the College of Military Science.
B.S., Massachusetts Institute of Technology, 1935; M.A., Georgetown University, 1956; Brigadier General, U.S. Air Force.
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Ph.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; Ph.D., 1933.
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B.A., University of Maryland, 1926; M.A., 1928.
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B.A., University of Massachusetts, 1941.
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M.D., University of Maryland, 1912.
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A.B., William and Mary College, 1939.

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B.S. University of Maryland, 1926; M.S., 1927; Ph.D., 1937.
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- WILBERT J. HUFF**, Chairman of the Division of Physical Sciences.
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; Ph.D., Yale University, 1917; D.Sc. (hon.), Ohio Northern University, 1927.



1807-1856-1957

COLLEGE PARK CAMPUS 1957

Wind Tunnel (V)

Engineering Labs (S)

Chemistry (C)

Mathematics (V)

Engineering Classroom (J)

Parking Lot "D"

Information B Pence

Harrison Laboratory Greenhouses & Plant Lab

Warehouses

Service Building

Ritchie Coliseum (Col)

Fraternity & Sorority Row

Fire Service Est. Bldg

Montgomery Hall (Dormitory)

Lehigh Road

U.S. ROUTE 1

WASHINGTON-BALTIMORE AVE

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AA Arts & Sciences-Francis Scott Key Hall
AR Nursery School
AR Armory
B Music
IB Administration
C Chemistry
Col Coliseum
DD Dairy-Turner Laboratory
DD Aviation Psychology Laboratory
DW Dean of Women
E Agronomy-Botany - H. J. Patterson Hall
EE Counseling Center
F Horticulture - Holzappel Hall
FF Journalism
G Ritchie Gymnasium
GG Activities Building
H Home Economics - Margaret Brant Hall
I Agricultural Engr. - Shriver Laboratory
J Engr. Classroom Bldg.
K Zoology - Silvester Hall
L Library - Shoemaker Building
M Morrill Hall
N Geography
O Agriculture - Symons Hall
P Industrial Arts & Education - J. M. Patterson Bldg.
Q Business & Public Administration - Tolioferro Hall
R Classroom Building - Woods Hall
S Engr. Laboratories
T Education - Skinner Building
U Chem. Engr.
V Wind Tunnel
W Preinkert Field House
X Judging Pavilion
Y Mathematics
Z Physics
JL Peultry - Jull Hall
JJ Engrs Research Lab. (Molecular Physics)

Sororities Not Shown
Phi Sigma Sigma
Alpha Chi Omega
Alpha Xi Delta

Fraternities Not Shown
Alpha Epsilon Pi
Zeta Beta Tau
Phi Kappa Gamma
Tau Epsilon Phi

Fraternities Not Shown
Alpha Epsilon Pi
Zeta Beta Tou
Phi Kappa Gamma
Tau Epsilon Phi

Civil
Defense
Training Bldg.

1957-58 CALENDAR

First Semester

1957

September 17-20
September 23
November 27
December 2
December 21

Tuesday-Friday
Monday
Wednesday after last class
Monday, 8 A.M.
Saturday after last class

Registration, first semester
Instruction begins
Thanksgiving recess begins
Thanksgiving recess ends
Christmas recess begins

1958

January 6
January 20
January 21
January 22-29

Monday, 8 A.M.
Monday
Tuesday
Wednesday-Wednesday, Inc.

Christmas recess ends
Charter Day
Pre-Examination Study Day
First Semester examinations

Second Semester

February 4-7
February 10
February 22
March 25
April 3
April 8
May 15
May 28
May 29-June 6
May 30
June 1
June 7

Tuesday-Friday
Monday
Saturday
Tuesday
Thursday after last class
Tuesday, 8 A.M.
Thursday
Wednesday
Thursday-Friday, Inc.
Friday
Sunday
Saturday

Registration, second semester
Instruction begins
Washington's birthday, holiday
Maryland Day
Easter recess begins
Easter recess ends
Military Day
Pre-Examination Study Day
Second Semester examinations
Memorial Day, holiday
Baccalaureate exercises
Commencement exercises

Summer Session, 1958

June 23
June 24
August 1

Monday
Tuesday
Friday

Registration, Summer Session
Summer Session begins
Summer Session ends

Short Courses

June 16-21
August 4-9
September 2-5

Monday-Saturday
Monday-Saturday
Tuesday-Friday

Rural Women's Short Course
4-H Club Week
Firemen's Short Course



College of AGRICULTURE

STAFF

GORDON M. CAIRNS, *Dean of Agriculture and Professor of Dairy Husbandry*
B.S., Cornell University, 1936; M.S., 1938; Ph.D. 1940.

PAUL R. POFFENBERGER, *Assistant Dean-Instruction, and Professor of
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of Horticulture*
B.S., University of Idaho, 1928; M.S., State College of Washington, 1930;
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and D.P.A., 1951, Harvard University.

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B.A., College of St. Rose, 1936.

WENDELL S. ARBUCKLE, *Professor of Dairy Manufacturing.*
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GERARD A. BOURBEAU, Associate Professor of Soils.

B.A., St. Francis Xavier College, 1933; B.S., Laval Quebec University, 1934;
M.S., University of Wisconsin, 1946; Ph.D., 1948.

MELVIN C. BRENNAN, Instructor, Visual Aids.

B.S., University of Maryland, 1952.

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B.A., University of Toronto, 1946; Ph.D., University of Virginia, 1950.

RUSSELL G. BROWN, Associate Professor of Botany.

B.S., West Virginia University, 1929; M.S., 1930; Ph.D., University of Maryland,
1934.

ROBERT L. BRUCE, Extension Assistant Professor and Assistant County Agent
Leader.

B.S., University of Nebraska, 1949; M.S., Cornell University, 1952.

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B.S., University of Kentucky, 1914; V.M.D., University of Pennsylvania, 1924.

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JOHN BURIC, Assistant Professor of Animal Husbandry.

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COLLEGE OF AGRICULTURE

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THE College of Agriculture offers both general and specialized training for students who wish to prepare for professional work in the broad field of agricultural endeavor. The students receive basic fundamental and cultural education, correlated with technical agricultural courses and the related sciences. In addition the college aims to train the students in a way that enables them to take responsible positions in agricultural and allied industries. Students come from both rural and urban areas. Farm-reared students enter either general or specialized curricula; non-farm reared students tend to follow the specialized programs.

History

The College of Agriculture is the oldest division of the University of Maryland at College Park. The institution was chartered in 1856 under the name of the Maryland Agricultural College. For three years the College was under private management. When Congress passed the Land Grant Act in 1862, the General Assembly of Maryland accepted it for the State and named the Maryland Agricultural College as the beneficiary. When the institution was merged in 1920 with the University of Maryland in Baltimore, the College of Agriculture took its place as one of the major divisions of this larger, more comprehensive organization.

In addition to teaching, the College of Agriculture includes the Agricultural Experiment Station and the Extension Service. They were established as the result of acts passed by Congress in 1887 and 1914 respectively. A more complete description of these two services appears later in this bulletin.

General

Curricula in the College of Agriculture provide for broad training in cultural and scientific courses as well as in courses related to various areas of agricultural specialization. Programs are offered for those planning to pursue general farming, livestock production, dairying, poultry husbandry, fruit or vegetable growing, floriculture or ornamental, horticulture, field crop production, or scientific activities related to agriculture, i.e., agricultural education, engineering, economics and chemistry. In addition students are trained in the various areas of food processing, for employment in agricultural business and industry or with a local, state or federal agency.

Many teachers also conduct research studies in their respective fields. Through these studies the frontiers of knowledge are constantly being extended. These new findings are incorporated in courses thereby making the instruction in agriculture dynamic.

The close relationship of extension specialists, county agents, and home demonstration agents with farmers and farm families enables workers in the College to evaluate the farm situation. New farm problems are brought to the attention of the research worker and new developments are presented to farmers and their families through practical demonstrations.

The coordination of teaching, research and extension provides for the effective training of students in the College of Agriculture for a career in agriculture. Many teachers also contribute to the research and extension programs concerned with agriculture and food production, the development of new varieties and processing procedures, as well as adjustments in agricultural production and marketing.

Trained workers in the College of Agriculture, through regulatory and service activities, are constantly working with actual problems associated with the improvement and maintenance of standards for farm products. Regulatory and control work extends over a wide range of activities and is concerned with reducing losses due to insect pests and diseases; preventing and controlling serious outbreaks of diseases and pests of animals and plants; analyzing fertilizer, feed and lime for guaranteed quality; and analyzing and testing germination quality of seeds to insure better seeds for farm planting. Marketing services include federal-state inspection, fresh egg law, dairy inspection, seed inspection, weight and measures and market news service.

Special Advantages

The University of Maryland is within a few miles of the Agricultural Research Center of the U. S. Department of Agriculture. This is the largest, best manned, and best equipped agriculture research agency in the world. Also, the University of Maryland, is within a few miles of the Washington D. C., offices of the U. S. Department of Agriculture and other government departments, including the Library of Congress. Students can easily visit these agencies and become acquainted with their work and the men who conduct this work. Such contacts have already proved valuable to many University of Maryland graduates.

Also, it is not uncommon for men from these agencies to speak before classes at the University and to be guest speakers at student club meetings and otherwise take part in student activities. No other college of agriculture in the United States is physically located to offer like opportunities to its students.

Coordination of Agricultural Work

The strength of the College of Agriculture of the University of Maryland lies in the close coordination of the instructional, research, extension, and regulatory functions within the individual departments, between the several departments, and in the institution as a whole. Instructors in the several departments are closely associated with the research, extension and regulatory

work being carried on in their respective fields, and in many cases, devote a portion of their time to one or more of these types of activities. Close coordination of these four types of work enables the University to provide a stronger faculty in the College of Agriculture, and affords a higher degree of specialization than would otherwise be possible. It insures instructors an opportunity to keep informed on the latest results of research, and to be constantly in touch with current trends and problems which are revealed in extension and regulatory activities. Heads of departments hold staff conferences to this end, so that the student at all times is as close to the developments in the frontiers of the several fields of knowledge as it is possible for an organization to put him.

In order that the work of the College shall be responsible to agricultural interests and shall adequately meet the needs of the several agricultural industries in the State, and that the course of instruction shall at all times be made most helpful for students who pursue them, Advisory Councils have been constituted in the major industries of agriculture. The Councils are composed of leaders in the respective lines of agriculture in Maryland, and the instructional staff of the College of Agriculture has the benefit of their council and advice. By this means the College, the industries, and the students are kept abreast of developments.

Facilities and Equipment

In addition to buildings, laboratories, libraries, and equipment for effective instruction in the related basic sciences and in the cultural subjects, the University of Maryland is provided with excellent facilities for research and instruction in agriculture. University farms, totaling more than 1,000 acres, are operated for instructional and investigational purposes. One of the most complete and modern plants for dairy and animal husbandry work in the country, together with herds of the principal breeds of dairy and beef cattle, and other livestock, provides facilities and materials for instruction and research in these industries. Excellent laboratory and field facilities are available in the Agronomy Department for breeding and selection in farm crops, and for soils research. The Poultry Department has a building for laboratories and classrooms, a plant comprising twenty acres, and flocks of the important breeds of poultry. The Horticulture Department is housed in a separate building, and has ample orchards and gardens for its various lines of work.

Departments and Curricula

Departments in the College of Agriculture and their curricula are as follows: Agricultural Economics and Marketing; Agricultural Education and Rural Life; Agriculture-Engineering; Agronomy (including crops and soils); Animal Husbandry; Botany (plant morphology and taxonomy, plant pathology, and plant physiology and ecology); Dairy (dairy husbandry and dairy technology); Entomology (including bee culture); Horticulture (pomology, olericulture, floriculture, ornamental horticulture and commercial

processing); Poultry Husbandry; Veterinary Science. In addition, there are curricula in Agricultural Chemistry and General Agriculture. Courses of study may also be arranged for any who desire to return to the farm after one or more years of training in practical agricultural subjects.

Admission

All students desiring to enroll in the College of Agriculture must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students more emphasis will be placed upon good marks and other indications of probable success in college rather than upon a fixed pattern of subject matter. In general, 4 units of English and 1 unit each of Social, Biological and Natural Sciences are required. One unit each of Algebra and Plane Geometry are necessary for certain curricula and desirable for all. While Foreign Language is desirable for certain programs, no Foreign Language is required for entrance. Fine Arts, Trade and Vocational subjects are acceptable as electives.

General Information

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, sororities, societies and special clubs, the University Band, student publications, University Post Office and Supply Store, write to the Editor of Publications for the General Information Issue of the Catalog.

Costs

Actual annual costs of attending the University include: \$165.00 fixed charges; \$75.00 special fees; \$400.00 board; \$140.00 to \$170.00 lodging for Maryland residents, or \$180.00 to \$220.00 for residents of other States and Countries; and laboratory fees which vary with the laboratory courses pursued. A matriculation fee of \$10.00 is charged all new students. A charge of \$250.00 is assessed to all students who are non-residents. of the State of Maryland.

For a more detailed statement of these costs, write to the Editor of Publications for the Catalog of General Information.

Military Instruction

All male students unless specifically exempted under University rules are required to take basic Air Force R. O. T. C. training for a period of two years. The successful completion of this course is a prerequisite for graduation, but

it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of military training will be required to complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may carry advanced Air Force R. O. T. C. courses during their junior and senior years which lead to a regular or reserve commission in the United States Air Force.

Junior Requirements

A student must acquire a minimum of 56 credits exclusive of the requirements in basic military science, hygiene, and physical activities with an average grade of at least C in the freshman and sophomore years before being permitted to begin advanced work.

Requirements for Graduation

Each student must acquire a minimum of 124 semester hour credits in academic subjects other than basic military science and physical activities. Men must acquire in addition 12 hours in basic military science and 4 hours in physical activities. Women must acquire in addition 4 hours in hygiene, and 4 hours in physical activities.

Scholarships and Grants-In-Aid for Agricultural Students

A limited number of scholarships are available for agricultural students. These include awards granted by the Sears Roebuck Foundation, the Borden Company, the Danforth Foundation, the Ralston Purina Company, J. McKenny Willis and Sons, Dairy Technology Society of Maryland and District of Columbia, Miller Chemical and Fertilizer Corporation, and Peninsula Horticultural Society.

These scholarships and grants-in-aid are awarded by the Faculty Committee in accordance with the terms of the respective grants. More detailed information about these awards is contained in the General Information Catalog.

AWARDS

Grange Award

The Maryland State Grange makes an annual award to the senior who has excelled in leadership and scholastic attainment and has contributed meritorious service to the College of Agriculture.

Alpha Zeta Medal

The Honorary Agricultural Fraternity of Alpha Zeta awards annually a medal to the agricultural student in the freshman class who attains the highest

average record in academic work. The presentation of the medal does not elect the student to the fraternity, but simply indicates recognition of high scholarship.

Virginia Dare Award

The Virginia Dare Extract Company awards annually a plaque and \$25.00 to the outstanding student in ice cream manufacturing with an over-all good standing in dairy.

National Block and Bridle Award

The National Block and Bridle awards annually a plaque to the member of the Block and Bridle Club who has done the most for the local club during the year.

Edgar P. Walls Award

Dr. Edgar P. Walls awards annually a gold watch to the senior doing outstanding work in Horticultural Processing.

Student Organizations

Students find opportunity for varied expression and growth in the several voluntary organizations sponsored by the College of Agriculture. These organizations are: Agricultural Economics Club, Block and Bridle Club, Collegiate 4-H Club, Dairy Science Club, Student Institute of Food Technology, Future Farmers of America, Plant Industry Club, Riding Club, Poultry Science Club, and the Veterinary Science Club.

Alpha Zeta is a national agricultural honor fraternity. Members are chosen from students in the College of Agriculture who have met certain scholastic requirements and displayed leadership in agriculture.

The Agricultural Student Council is made up of representatives from the various student organizations in the College of Agriculture. Its purpose is to coordinate activities of these organizations and to promote work which is beneficial to the College.

Student Judging Teams

The College of Agriculture sponsors judging teams for dairy cattle, dairy products, horticultural products, livestock, meats and poultry. Team members are selected from students taking courses designed especially to train them for this purpose. Teams are entered in major contests where the students compete with teams from other state universities or agricultural colleges.

Student Advisers

Each student in the College of Agriculture is assigned to a faculty adviser, either departmental or general. Departmental advisers consist of heads of departments or persons selected by them to advise students with curricula in their respective departments. General advisers are selected for students who have no definite choice of curriculum in mind, or who wish to pursue the general curriculum in agriculture.

Electives

The electives in the suggested curricula which follow affords opportunity for those who so desire to supplement major and minor fields of study or to add to their general training.

With the advice and consent of those in charge of his registration, a student may make such modifications in his curriculum as are deemed advisable to meet the requirements of his particular need.

Farm and Laboratory Practice

The head of each department will help to make available opportunities for practical or technical experience along his major line of study for each student whose major is in that department and who is in need of such experience. For inexperienced students in many departments this need may be met by one or more summers spent on a farm.

Freshman Year

The program of the freshman year in the College of Agriculture is the same for all curricula of the College. Its purpose is to afford the student an opportunity to lay a broad foundation in subjects basic to agriculture and the related sciences, to articulate beginning work in college with that pursued in high or preparatory schools, to provide opportunity for wise choice of programs in succeeding years, and to make it possible for a student before the end of the year to change from one curriculum to another, or from the College of Agriculture to the curriculum in some other college of the University with little or no loss of credit.

Students entering the freshman year with a definite choice of curriculum in mind are sent to departmental advisers for counsel as to the wisest selection of freshmen electives from the standpoint of their special interests and their probable future programs. Students entering the freshman year with no definite curriculum in mind, are assigned to a general adviser, who assists with the choice of freshman electives and during the course of the year acquaints the students with opportunities in the upper curricula in the College of Agriculture and in the other divisions of the University. If by the close of the freshman year a student makes no definite choice of a specialized curriculum, he continues under the guidance of his general adviser in the General Agriculture Curriculum.

Agriculture Curriculum

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and Readings in American Literature.....	3	3
G. & P. 1—American Government.....	3	....
Soc. 1—Sociology of American Life.....	....	3
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities (Men and Women).....	1	1
Hea. 2, 4—Hygiene (Women).....	2	2
Agr. 1—Introduction to Agriculture.....	1	....
*Math. 0—Basic Mathematics.....	....	0
**Elect either of the following pairs of courses		
Bot. 1, General Botany and Zool. 1, General Zoology.....	4	4
Chem. 1, 3, General Chemistry.....	4	4
Elect one of the following each semester:		
Modern Language	3	3
†Math 5, 6 or 10, 11, or 10, 13.....	3	3
Physics 1, 2—Elements of Physics.....	3	3
A. H. 1—Fundamentals of Animal Husbandry.....	3	....
‡Agron. 1—Crop Production.....	....	3
**Dairy 1—Fundamentals of Dairying.....	....	3

Agriculture—General

This curriculum is designed for persons wishing to return to the farm, enter work allied to farming, for those seeking a general rather than a specialized knowledge of the field of agriculture and for those preparing to work in any general field in agriculture.

By proper use of the electives allowed in this curriculum, a student may choose a field of concentration in agriculture and at the same time elect courses that contribute to a liberal education.

*An examination in Mathematics will be given during Freshman Orientation week; students passing this test will not be required to take Math 0.

**Both pairs of courses are required for graduation from the College of Agriculture.

†Students expecting to pursue the curriculum in either Agricultural Chemistry or Agriculture-Engineering should, if qualified, take Math 18 and 19. If not qualified they should take Math 1.

‡The combination of Agronomy 107 and 108 will be considered as satisfying the requirement of Agronomy 1 for students who desire a more intensive course.

***Students taking A. II. curriculum should take Dairy 1 the second semester.

General Agriculture Curriculum†

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Chem. 1, 3—General Chemistry.....	4	4
P. H. 1—Poultry Production.....	3	....
Dairy 1—Fundamentals of Dairying.....	....	3
Speech 1, 2—Public Speaking.....	2	2
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	19	19

Junior Year

Zool. 104—Genetics	3	....
Hort. 5—Fruit Production, or Hort. 58—Vegetable Production....	....	3
Ent. 1—Introductory Entomology, or Ent. 10—Applied Entmology	....	3
Agron. 10—General Soils .....	....	4
Agr. Engr. 101—Farm Machinery.....	3	....
Econ. 37—Fundamentals of Economics.....	3	....
Biological or Physical Science Sequence.....	3	3
Electives	6	6
Total	18	19

Senior Year

A. E. 50—Farm Economics	3	....
A. E. 107—Analysis of the Farm Business.....	3	....
A. E. 108—Farm Management .....	....	3
Agron. 151—Cropping Systems.....	....	2
R. Ed. 114—Rural Life and Education.....	....	3
Electives	9	7
Total	15	15

AGRICULTURAL CHEMISTRY

This curriculum insures adequate instruction in the fundamentals of both the physical and biological sciences. It may be adjusted through the selection of electives to fit the student for work in agricultural experiment stations, soil bureaus, geological surveys, food laboratories, fertilizer industries and those handling food products.

†If A. H. 1 and Agron. 1 are not elected in the Freshman year they must be elected in subsequent years.

Agricultural Chemistry Curriculum

Sophomore Year

	Semester	
	I	II
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
Chem. 15—Qualitative Analysis	4	...
Chem. 21—Quantitative Analysis .....	...	4
Math. 20, 21—Calculus.....	4	4
Bot. 1—General Botany	4	...
Zool. 1—General Zoology.....	...	4
A. S. 3, 4—Basic Air Basic R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	19	19

Junior Year

Chem. 35, 37—Elementary Organic Lecture.....	2	2
Chem. 36, 38—Elementary Organic Laboratory.....	2	2
Chem. 123—Quantitative Analysis	4	...
Modern Language	3	3
Geol. 1—Geology .....	...	3
Agron. 10—General Soils .....	...	4
Sp. 7—Public Speaking	2	...
Electives in Biology.....	3	3
Total	16	17

Senior Year

H. 5, 6—History of American Civilization.....	3	3
Modern Language	3	3
Phys. 20, 21—General Physics.....	5	5
Electives in Agricultural Chemistry.....	6 or 7	6 or 7
Total	17 or 18	17 or 18

AGRICULTURAL ECONOMICS AND MARKETING

The curriculum in agricultural economics and marketing is designed to prepare students for the following types of positions: On the farm as farm operators and farm managers; with farm organizations, such as the Farm Bureau and farmers' cooperatives; with private and corporate business concerns; and positions with state and federal agencies, such as college teachers, agricultural extension workers, and research with federal and state agencies.

Courses in this department are designed to provide fundamental training in the basic economic principles underlying agriculture. The curriculum includes courses in farm management, general agricultural economics, marketing, finance, prices, taxation, land economics, agricultural policy, and foreign agricultural trade to give the student the foundation needed to meet the production and distribution problems confronting the individual farmer in a progressive rural community.

Farming is a business, as well as a way of life, and as such demands for its successful conduct the use of business methods; the keeping of farm business records, analyzing the farm business, and of organizing and operating the farm as a business enterprise. It requires knowledge of farm resources and taxation, methods of financing agricultural production and marketing, including agencies involved, services rendered and the cost of getting products from the producer to the consumer through cooperative and private agencies.

Agricultural Economics and Marketing Curriculum*

	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
P. H. 1—Poultry production or Dairy 1 Fundamentals of Dairying	....	3
Chem. 1, 3—General Chemistry.....	4	4
Math. 5—General Mathematics.....	3	....
Econ. 37—Fundamentals of Economics.....	3	....
A. E. 50—Farm Economics.....	....	3
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	17	17
<i>Junior Year</i>		
A. E. 101—Marketing of Farm Products.....	3	....
A. E. 107—Analysis of the Farm Business.....	3	....
A. E. 104—Farm Finance .....	....	3
H. 5, 6—History of American Civilization.....	3	3
B. A. 130—Elements of Business Statistics; or Agr. 100—Intro-		
ductory Agricultural Biometrics.....	....	3
Speech 1, 2—Public Speaking.....	2	2
Agron. 10—General Soils.....	....	4
Electives	6	3
Total	17	18
<i>Senior Year</i>		
A. E. 103—Cooperation in Agriculture.....	3	....
A. E. 106—Prices of Farm Products.....	....	3
Agr. Engr. 101—Farm Machinery.....	3	....
A. E. 108—Farm Management.....	....	3
Soc. 113—The Rural Community.....	....	3
A. H. 110—Feeds and Feeding.....	3	....
A. E. 111—Land Economics	3	....
A. E. 110—Seminar	1	1
Electives	5	8
Total	18	18

*If A. H. 1 and Agron. 1 are not elected in the Freshman year, they must be elected in subsequent years.

AGRICULTURAL EDUCATION AND RURAL LIFE

The primary objective of this curriculum is to prepare students for teaching vocational agriculture. It also prepares them for work as county agents and allied lines of the rural educational services. Graduates are in demand in rural businesses, particularly of the cooperative type; a number have entered the Federal service; others are engaged in teaching and research in agricultural colleges; quite a few have returned to the farm as owner-managers.

Courses in extension methods are included in agricultural education. They are especially designed for students who wish to train for extension work, as well as others who wish to learn more about how the extension service operates. Agricultural education majors, as well as others, are urged to take these courses if they can possibly fit them into their curriculum.

In addition to the regular entrance requirements of the University, involving graduation from a standard four-year high school, students electing the agricultural education curriculum must present evidence of having acquired adequate farm experience after reaching the age of fourteen years.

All students following this curriculum are required to attend meetings of the Collegiate Chapter of the future Farmers of America during their junior and senior years in order to gain needed training to serve as advisers of high school chapters of FFA upon graduation. Freshmen and sophomore agricultural education majors are also urged to become members of the FFA and to participate in the activities of the organization.

Agricultural Education Curriculum*

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Chem. 1, 3—General Chemistry.....	4	4
P. H. 1—Poultry Production.....	3	....
Dairy 1—Fundamentals of Dairy Husbandry.....	....	3
Speech 1, 2—Public Speaking.....	2	2
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	19	19
<i>Junior Year</i>		
Bot. 20—Diseases of Plants.....	3	....
Ent. 1—Introductory Entomology.....	....	3
A. H. 110—Feeds and Feeding.....	3	....
Agron. 10—General Soils.....	....	4
A. Engr. 101—Farm Machinery.....	3	....
R. Ed. 107—Observation and Analysis of Teaching in Agriculture	....	3
Hort. 58—Vegetable Production.....	....	3
Econ. 37—Fundamentals of Economics.....	3	....
H. D. Ed. 100, 101—Principles of Human Development I and II	3	3
Restricted Science Electives.....	3	3
Total	18	19

*If A. H. 1 and Agron. 1 are not elected in the Freshman year, they must be elected in subsequent years.

<i>Senior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
A. Engr. 102—Gas Engines, Tractors and Automobiles.....	....	3
R. Ed. 109—Teaching Secondary Vocational Agriculture.....	3	....
R. Ed. 111—Teaching Young and Adult Farmer Groups.....	1	....
†R. Ed. 103—Practice Teaching.....	5	....
R. Ed. 101—Teaching Farm Practicums and Demonstrations.....	2	....
A. Engr. 104—Farm Mechanics.....	2	....
A. E. 108—Farm Management.....	....	3
R. Ed. 112—Departmental Management.....	....	1
R. Ed. 114—Rural Life and Education.....	....	3
Restricted Electives	3	5
Total	16	15

AGRICULTURAL ENGINEERING

The department offers to students of agriculture training in those agricultural subjects which are based upon engineering principles. These subjects may be grouped under five heads: farm machinery and farm power, farm buildings, soil and water practices related to engineering and rural electrification.

Five-Year Program in Agriculture—Engineering

For those students who wish to specialize in the application of engineering principles to the physical and biological problems of agriculture there is offered a combined program, extending over a five-year period, arranged jointly by the College of Agriculture and the College of Engineering, and leading to a degree from each of these colleges.

This program prepares graduates to enter state, federal or commercial fields of activity in such work as soil and water conservation, rural electrification design and sale of farm machinery and structures, and in the development of new uses for farm products and the profitable utilization of farm wastes and by-products.

To be properly trained in these fields a student needs a broader knowledge of basic and applied engineering principles than could be provided in a four-year course in agriculture. He also needs a broader training in the fundamentals of agriculture than a standard four-year course in engineering could furnish.

Upon completion of the normal four-year course of study the degree of Bachelor of Science in Agriculture is granted. For the fifth year the student registers in the College of Engineering, and at the end of that year, upon satisfactory completion of the required course of study, receives a degree in civil, electrical, mechanical or chemical engineering.

†Majors in agricultural education will also be required to take R. Ed. 104, Practice Teaching, four credits (or its equivalent), to be arranged in a four-week period prior to the opening of the University of Maryland in the fall of their senior year.

Curriculum in Agriculture—Engineering

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and Readings in American Literature....	3	3
Speech 7—Public Speaking.....	....	2
*Math 18, 19—Elementary Mathematical Analysis.....	5	5
Chem. 1, 3—General Chemistry.....	4	4
Dr. 1, 2—Engineering Drawing.....	2	2
R. Ed. 1—Introduction to Agriculture.....	1	....
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	19	20

For the students whose final objective is a degree in Civil Engineering, the balance of the curriculum is:

Sophomore Year (Civil Engineering Option)

G. & P. 1—American Government.....	3	....
Math. 20, 21—Calculus.....	4	4
Phys. 20, 21—General Physics.....	5	5
Mech. 1—Statics and Dynamics.....	....	3
Surv. 1—Plane Surveying.....	2	....
Surv. 50—Advanced Surveying.....	....	4
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	18	20

Junior Year (Civil Engineering Option)

Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
Speech 108—Public Speaking.....	....	2
Dr. 3—Advanced Engineering Drawing.....	2	....
Geol. 2—Engineering Geology.....	....	2
Mech. 50—Strength of Materials.....	4	....
Mech. 53—Materials of Engineering.....	....	2
Bot. 1—General Botany.....	4	....
Zool. 1—General Zoology.....	....	4
Agr. Engr. 101—Farm Machinery	3	....
Agr. Engr. 107—Farm Drainage .....	....	2
Agr. Engr. 109—Farm Applications of Electricity.....	....	2
Approved Electives	3	3
Total	19	20

*A qualifying test is given during registration to determine whether the student is adequately prepared for Math. 18. A student failing this test is required to take Math. 1, Introductory Algebra, without credit.

	Semester	
	I	II
<i>Fourth Year (Civil Engineering Option)</i>		
C. E. 50—Fluid Mechanics.....	3	...
Soc. 1—Sociology of American Life.....	...	3
Surv. 100—Curves and Earthwork.....	3	...
C. E. 100—Theory of Structures.....	...	4
M. E. 50—Principle of Mechanical Engineering.....	...	3
E. E. 50—Fundamentals of Electrical Engineering.....	3	...
Agr. Engr. 102—Gas Engines, Tractors and Automobiles.....	...	3
Agr. Engr. 105—Farm Buildings	2	...
A. E. 108—Farm Management.....	...	3
Approved Electives	8	4
Total	19	20

<i>Fifth Year (Civil Engineering Option)</i>		
H. 5, 6—History of American Civilization.....	3	3
Econ. 37—Fundamentals of Economics.....	3	...
Engr. 100—Engineering Contracts and Specifications.....	...	2
Engr. 7—Technical Writing.....	...	2
Bact. 55—Lectures in Sanitary Bacteriology.....	2	...
C. E. 101—Soil Mechanics	3	...
C. E. 102—Structural Design	6	...
C. E. 103—Concrete Design .....	...	6
C. E. 104—Water Supply	3	...
C. E. 105—Sewerage .....	...	3
C. E. 106—Elements of Highways .....	...	3
Total	20	19

For the student whose final objective is a degree in Mechanical Engineering, the balance of the curriculum is:

<i>Sophomore Year (Mechanical Engineering Option)</i>		
G. & P. 1—American Government.....	3	...
Soc. 1—Sociology of American Life.....	...	3
Math. 20, 21—Calculus.....	4	4
Phys. 20, 21—General Physics.....	5	5
Surv. 1—Plane Surveying.....	...	2
Dr. 3—Advanced Engineering Drawing.....	2	...
Shop 1—Machine Shop Practice.....	2	...
Shop 2—Machine Shop Practice.....	...	1
Shop 3—Manufacturing Processes .....	...	1
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	20	20

<i>Junior Year (Mechanical Engineering Option)</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and Literature.....	3	3
Math. 64—Differential Equations for Engineers.....	3	...
Mech. 2—Statics and Dynamics.....	5	...
Mech. 52—Strength of Materials.....	...	5
Bot. 1—General Botany.....	4	...
Zool. 1—General Zoology.....	...	4
Agr. Engr. 101—Farm Machinery	3	...
Agr. Engr. 107—Farm Drainage .....	...	2
Agr. Engr. 106—Farm Mechanics .....	...	2
Approved Elective .....	...	3
Total	18	19

	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
<i>Fourth Year (Mechanical Engineering Option)</i>		
E. E. 51, 52—Principles of Electrical Engineering.....	4	4
M. E. 53—Metallography .....	....	3
M. E. 54—Fluid Mechanics .....	....	3
M. E. 100—Thermodynamics	3	....
Agr. Engr. 102—Gas Engines, Tractors and Automobiles.....	....	3
Agr. Engr. 105—Farm Buildings	2	....
A. E. 108—Farm Management.....	....	3
Approved Electives	11	4
Total	20	20
<i>Fifth Year (Mechanical Engineering Option)</i>		
Engr. 100—Engineering Contracts and Specifications.....	....	2
H. 5, 6—History of American Civilization.....	3	3
M. E. 101—Heat Transfer	2	....
M. E. 102—Heating and Air Conditioning.....	....	3
M. E. 103—Refrigeration	3	....
M. E. 104, 105—Prime Movers.....	4	4
M. E. 106, 107—Mechanical Engineering Design.....	4	4
M. E. 108, 109—Mechanical Laboratory.....	2	2
Total	18	18

For the student whose final objective is a degree in Electrical or Chemical Engineering, curricula corresponding to the foregoing will be arranged.

AGRONOMY

The Department of Agronomy offers instruction in crop production, crop breeding, soil chemistry, soil physics, soil fertility, soil classification, and soil conservation. These courses prepare students to enter various types of private, commercial, state, and federal agronomic positions. By careful election of courses the student may lay a foundation for either advanced study or or employment upon graduation with the B.S. degree. Opportunities for advanced students are shown in the Graduate School catalogue. Depending on the electives chosen, students graduating with the B.S. degree are trained for general farming, farm management, specialized seed production, county agent work, soil conservation, or employment with commercial seed companies, fertilizer companies or equipment manufacturers.

Crop Production Curriculum*

	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Chem. 1, 3—General Chemistry.....	4	4
Ent. 1—Introductory Entomology.....	3	....
Agron. 10—General Soils.....	....	4
Speech 1, 2—Public Speaking.....	2	2
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	19	20

*If A. H. 1 is not elected in the Freshman year, it must be elected in subsequent years. With permission of the crops adviser additional courses in Mathematics, Physics, Chemistry, and Botany may be substituted for the courses in this curriculum which are required *only* by the Agronomy Department.

	Semester	
	I	II
<i>Junior Year</i>		
Agron. 107—Cereal Crop Production.....	3	....
Agron. 108—Forage Crop Production.....	....	3
Zool. 104—Genetics	3	....
Chem. 31—Elements of Organic Chemistry.....	2	....
Chem. 32—Elements of Organic Laboratory.....	1	....
**Advanced Soils .....	....	3
Bot. 11—Plant Taxonomy .....	....	3
Bot. 101—Plant Physiology	4	....
Bot. 20—Diseases of Plants.....	3	....
Electives .....	....	7
Total	16	16

Senior Year

Agron. 103—Crop Breeding	2	....
Agron. 151—Cropping Systems .....	....	2
Agron. 154—Weed Control in Field Crops.....	3	....
A. E. 108—Farm Management.....	....	3
Agr. Engr. 101—Farm Machinery.....	3	....
**Advanced Soils .....	....	3
A. H. 110—Feeds and Feeding.....	3	....
Agron. 101—Senior Seminar.....	....	1
Electives	5	7
Total	16	16

Crop Breeding

Students specializing in crop breeding will elect Math. 10, or Math. 18.

Soils Curriculum**Sophomore Year*

Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Speech 1, 2—Public Speaking.....	2	2
Bot. 1—General Botany.....	4	....
Physics 10, 11—Fundamentals of Physics.....	4	4
Agron. 10—General Soils.....	....	4
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	20	20

**Any advanced Soils course.

*If A. H. 1 is not elected in the Freshman year it must be elected in subsequent years. With permission of the soils adviser, additional courses in Mathematics, Physics, Chemistry, and Botany may be substituted for the courses in this curriculum which are required *only* by the Agronomy Department.

<i>Junior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Agron. 107—Cereal Crop Production.....	3	...
Agron. 112—Commercial Fertilizers .....	...	3
Agron. 116—Soil Analysis for Plant Nutrients.....	3	...
Agron. 114—Soil Classification and Geography.....	...	4
Bot. 101—Plant Physiology.....	4	...
Chem. 15—Qualitative Analysis	4	...
Chem. 19 or 21—Quantitative Analysis .....	...	4
Chem. 35—Organic Chemistry .....	...	2
Chem. 36—Elementary Organic Chemistry Laboratory.....	...	2
Electives	3	...
Total	17	15
<i>Senior Year</i>		
A. Engr. 107—Farm Drainage.....	...	2
Agron. 119—Soil Mineralogy	4	...
Agron. 113—Soil Conservation	3	...
Agron. 108—Forage Crop Production.....	...	3
Agron. 151—Cropping Systems .....	...	2
A. E. 108—Farm Management.....	...	3
Agron. 117—Soil Physics	3	...
Agron. 111—Soil Fertility	3	...
Zool. 1—General Zoology.....	...	4
Electives	3	2
Total	16	16

Soil Conservation

Students wishing to specialize in soil mapping and farm planning phases of soil conservation will follow the soils curriculum except that Physics 10, 11, and Chem. 15, 19, 35, 36 will not be required. Agron. 105, A.H. 1, 110, Dairy 1, and a course in physics (if the student does not have credit for physics in high school) will be required. Suggested electives are P.H. 1, Hort. 5, 58, Ag. Eng. 101, Bot. 20, Ent. 1, and Bact. 1.

ANIMAL HUSBANDRY

The curriculum in Animal Husbandry is organized for the purpose of preparing students for various phases of work in the field of animal industry as: operators and managers of livestock farms, as investigators and research workers in Federal, State and private institutions, and as workers in specialized fields where a knowledge of the livestock industry is necessary

By proper use of electives, the student may equip himself to become a county agricultural agent; to meet the requirements of positions with certain types of private and cooperative business concerns; or, with more technical and specialized training, to become qualified for instructional work in colleges, for investigational work in State and Federal experiment stations or in commercial research laboratories. Students who desire to enter the field of teaching or highly specialized research should elect the more scientific courses offered by this and by other departments.

Animal Husbandry Curriculum*

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
Chem. 31, 33—Elements of Organic Chemistry.....	2	2
Chem. 32, 34—Elements of Organic Laboratory.....	1	1
Bot. 1—General Botany.....	4	....
Zool. 1—General Zoology.....	....	4
Econ. 37—Fundamentals of Economics.....	3	....
A. H. 30—Types and Breeds of Livestock.....	....	3
Speech 1, 2—Public Speaking.....	2	2
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	19	19
<i>Junior Year</i>		
H. 5, 6—History of American Civilization.....	3	3
V. S. 101—Comparative Anatomy and Physiology.....	3	....
V. S. 102—Animal Hygiene .....	....	3
A. H. 110—Feeds and Feeding.....	3	....
A. H. 120—Principles of Breeding.....	....	3
A. H. 131—Sheep Production .....	....	3
**A. H. 140—Livestock anagement.....	....	3
Zool. 104—Genetics	3	....
Agron. 1—Crop Production.....	....	3
Electives	6	0
Total	18	18
<i>Senior Year</i>		
A. H. 111—Animal Nutrition	3	....
A. H. 130—Beef Cattle Production.....	3	....
A. H. 132—Swine Production .....	....	3
A. H. 150—Livestock Markets and Marketing.....	2	....
A. H. 160—Meat and Meat Products.....	....	3
Agr. Eng. 101—Farm Machinery.....	3	....
A. E. 103—Farm Management.....	....	3
Bact. 1—General Bacteriology.....	4	....
Agron. 10—General Soils.....	....	4
A. H. 170, 171—Seminar.....	1	1
Electives	3	4
Total	19	18

BOTANY

The department offers three major fields of work; plant morphology and taxonomy; plant pathology; or plant physiology and ecology. The required courses for the freshman and sophomore years are the same for all students. In the junior and senior years, the student elects botany courses to suit his particular interest. Courses are required in other subjects to contribute toward

*Students planning this curriculum should elect A. H. 1 the first semester and Dairy 1 the second semester of the Freshman year.

**Required for students lacking Farm Experience.

a broad cultural education, and to support the courses selected in the chosen field of botany.

Though cooperation with the College of Education, students who wish to meet the requirements for the state high school teacher's certificates, may elect the necessary work in education.

The curriculum as outlined, provides a complete survey of the field of botany for prospective high school teachers, and lays a good foundation for graduate work in botany in preparation for college teaching and for research in state or federal experiment stations, or in private research laboratories.

Students are also afforded an opportunity for training for other vocations involving various botanical applications, such as extension work, and positions with seed companies, canning companies and other commercial concerns.

Botany Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
Modern Language, preferably German.....	3	3
Bot. 20—Diseases of Plants.....	3	....
Bot. 2—General Botany .....	....	4
Chem. 1, 3—General Chemistry.....	4	4
Speech 1, 2—Public Speaking.....	2	2
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	19	20

Junior Year

H. 5, 6—History of American Civilization.....	3	3
Modern Language	3	3
Phys. 10, 11—Fundamentals of Physics.....	4	4
Bot. 101—Plant Physiology	4	....
Bot. 11—Plant Taxonomy .....	....	3
Bot. 110—Plant Microtechnique .....	....	3
Bact. 1—Bacteriology	4	....
Electives	3	3
Total	21	19

Senior Year

Bot. 112—Seminar	1	1
Bot. 111—Plant Anatomy	3	....
Bot. 102—Plant Ecology .....	....	3
Bot. 115—Structure of Economic Plants.....	....	3
Zool. 104—Genetics	3	....
Botany Electives	4-8	2-5
Electives	5-0	7-4
Total	16	16

Students specializing in Plant Morphology or Plant Taxonomy will elect Bot. 114 and Bot. 128; those specializing in Plant Pathology will elect Bot. 122, Ent. 1, and two of the following: Bot. 123, Bot. 124, Bot. 125, Bot. 126; those specializing in Plant Physiology will elect Organic Chemistry, Chem. 31, 32, 33, 34.

DAIRY

The Dairy Department offers instruction in two major lines of work; dairy husbandry and dairy technology. In the dairy husbandry curriculum, students are given technical and practical training in the breeding, feeding, management, and selection of dairy cattle and in milk production. With suitable choice of courses, students are qualified as operators of dairy farms, for breed promotion and sales work, or employment with private and co-operative business organizations, and for county agent work. The dairy technology curriculum is designed to prepare students for practical and scientific work concerned with the processing and distribution of milk, manufacture and handling of butter, cheese, ice cream, and other products, in dairy plant operation and management, and in dairy inspection and quality control. Students satisfactorily majoring in dairy technology are qualified for the many technical and applied positions in the various branches of the dairy industry.

By careful election of courses in either curriculum the student may lay a foundation for advanced study, for instructional work in colleges, and for research in experiment stations or commercial laboratories. The suggested curricula will be modified to meet the special needs of individual students.

Dairy Husbandry Curriculum*

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
Chem. 31, 33—Elements of Organic Chemistry.....	2	2
Chem. 32, 34—Elements of Organic Chemistry Laboratory.....	1	1
Bot. 1—General Botany	4	....
Zool. 1—General Zoology	4	....
Bact. 1—General Bacteriology.....	....	4
Dairy 20—Dairy Breeds and Selection.....	2	....
Agron. 1—Crop Production.....	....	3
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Dairy 30—Dairy Cattle Judging.....	....	2
Total	20	19

*Students planning to pursue this curriculum should elect Dairy 1 the second semester of the Freshman year. If A. H. 1 is not elected in the freshman year it must be taken in subsequent years.

	Semester	
	I	II
<i>Junior Year</i>		
H. 5, 6—History of American Civilization.....	3	3
Agron. 10—General Soils.....	....	4
A. H. 110—Feeds and Feeding.....	3	....
Bact. 123—Dairy Bacteriology.....	4	....
Dairy 103—Physiology of Milk Secretion.....	....	3
Speech 1, 2—Public Speaking.....	2	2
Zool. 104—Genetics	3	....
Electives	3	6
Total	18	18

<i>Senior Year</i>		
Agr. Engr. 101—Farm Machinery.....	3	....
A. E. 108—Farm Management.....	....	3
Econ. 37—Fundamentals of Economics.....	....	3
V. S. 101—Comparative Anatomy and Physiology.....	3	....
V. S. 102—Animal Hygiene .....	....	3
A. H. 111—Animal Nutrition	3	....
Dairy 101—Dairy Production	3	....
Dairy 105—Dairy Cattle Breeding .....	....	3
Dairy 120—Dairy Seminar .....	....	1
Electives	4	4
Total	16	17

Dairy Technology Curriculum*

Technical Phase

<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
Chem. 19—Quantitative Analysis.....	....	4
H. 5, 6—History of American Civilization.....	3	3
Bact. 1—General Bacteriology	4	....
Bot. 1—General Botany.....	4	....
Zool. 1—General Zoology.....	....	4
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	18	18

<i>Junior Year</i>		
Chem. 31, 32—Elements of Organic Chemistry.....	2	2
Chem. 32, 34—Elements of Organic Chemistry Laboratory.....	1	1
Bact. 123—Dairy Bacteriology.....	4	....
Dairy 40—Grading Dairy Products.....	....	2
Dairy 108—Dairy Technology	4	....
Dairy 110—Concentrated Milk, Cheese and Butter.....	....	4
Speech 1, 2—Public Speaking.....	2	2
Econ. 37—Fundamentals of Economics.....	3	....
Physics 1—Elements of Physics.....	....	3
Electives	3	4
Total	19	18

*Students may elect to take either the Technical or the Business Phase. Dairy 1 should be taken during the Freshman year.

<i>Senior Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Dairy 109—Market Milk	4	....
Dairy 112—Ice Cream .....	....	4
Dairy 114—Special Laboratory Methods .....	....	4
Dairy 116—Dairy Plant Management.....	....	3
Dairy 120—Dairy Seminar .....	....	1
Agr. Eng. 111—Fundamentals of Food Processing.....	....	3
Electives	10	6
Total	17	18

*Business Phase**Sophomore Year*

Eng. 3, 4—Composition and World Literature; or Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Bot. 1—General Botany.....	4	....
Zool. 1—General Zoology.....	....	4
Bact. 1—General Bacteriology.....	4	....
Econ. 37—Fundamentals of Economics.....	....	3
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	18	17

Junior Year

B. A. 10, 11—Organization and Control.....	2	2
B. A. 20, 21—Principles of Accounting.....	4	4
Speech 1, 2—Public Speaking.....	2	2
Dairy 40—Grading Dairy Products.....	....	2
Dairy 110—Concentrated Milk, Cheese and Butter.....	....	4
A. E. 115—Marketing Dairy Products.....	3	....
Bact. 133—Dairy Bacteriology.....	4	....
Electives	3	5
Total	18	19

Senior Year

Dairy 108—Dairy Technology	4	....
Dairy 109—Market Milk	4	....
Dairy 112—Ice Cream Making.....	....	4
Dairy 116—Dairy Plant Management.....	....	3
Dairy 121—Dairy Seminar .....	....	1
A. E. 111—Fundamentals of Food Processing.....	3	....
Electives	9	9
Total	20	17

ENTOMOLOGY

This curriculum, which trains students for work in various types of private, commercial, state and federal entomological positions, includes basic courses in Entomology and related fields. Most of the first two years is de-

voted to obtaining this essential background. In the junior and senior years the student, besides the required courses, will choose 18 credit hours from the following list according to his needs: A.H. 1; Agron. 1; Agron. 10; Bact. 131; Bot. 11; Bot. 123; Bot. 124; Bot. 125; Chem. 31, 33; Chem. 32, 34; Dairy 1; French 1, 2; German, 1, 2; Hort. 5, 6; Hort. 11; Hort. 58; Hort. 59; Math. 5, 10, or 11; Physics 1, 2; Zool. 104. Other electives in Entomology and related subjects are available to broaden the scope of the training.

A student wishing an undergraduate minor in Entomology should take the introductory course (Ent. 1) and after consultation with the heads of both the major and minor departments will select courses that will contribute most to the end he has in view.

Entomology Curriculum*

	Semester	
	I	II
Sophomore Year		
Eng. 3, 4, or 5, 6.....	3	3
Chem. 1, 3—General Chemistry.....	4	4
Ent. 2—Insect Morphology.....	3	....
Ent. 3—Insect Taxonomy.....	....	3
Bot. 1—General Botany	4	....
Bact. 1—General Bacteriology.....	....	4
Physical Activities	1	1
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Total	18	18

Junior Year

H. 5, 6—History of American Civilization.....	3	3
Speech 1, 2—Public Speaking.....	2	2
Bot. 20—Diseases of Plants.....	3	....
Ent. 105—Medical Entomology	3	....
Ent. 101—Economic Entomology .....	....	3
Courses from suggested list.....	5	5
Electives	3	6
Total	19	19

Senior Year

***Ent. 110, 111—Special Problems.....	1	1
Ent. 112—Seminar	1	1
**Ent. 116—Insect Pests of Ornamentals and Greenhouse Plants .....	....	3
**Ent. 117—Insect Pests of Field Crops and Stored Products....	2	....
**Ent. 118—Insect Pests of Fruit and Vegetable Crops.....	....	3
**Ent. 119—Insect Pests of Domestic Animals.....	2	....
Courses from suggested list.....	4	4
Electives	6	4
Total	16	16

*Students planning to pursue this curriculum should elect Ent. 1 the second semester of the Freshman year.

**Of these four courses each student is required to take only two.

***Students may satisfy this requirement in one semester, if their schedule permits, or expand the work and credits upon departmental approval.

HORTICULTURE

The Department of Horticulture offers instruction in pomology (fruits), olericulture (vegetables), floriculture (flowers) and ornamental gardening, and processing of horticultural crops. These courses prepare students to enter commercial production and the horticultural industries such as fruit and vegetable processing and seed production. Students are likewise prepared to enter the allied industries as horticultural workers with fertilizer companies, equipment manufacturers, and others. Students who wish to enter specialized fields of research and teaching may take advanced work in the department. A minimum of 24 credit hours in horticultural courses is required for graduation.

Pomology and Olericulture Curriculum.

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Chem. 1, 3—General Chemistry.....	4	4
Bot. 20—Diseases of Plants.....	3	....
Hort. 5, 6—Fruit Production.....	3	2
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Electives .....	....	2
Total	20	18

Junior Year

Bot. 101—Plant Physiology	4	....
Bot. 111—Plant Anatomy	3	....
Agron. 10—General Soils .....	....	4
Hort. 58—Vegetable Production .....	....	3
Hort. 59—Small Fruits .....	....	3
Speech 1, 2—Public Speaking.....	2	2
Econ. 37—Fundamentals of Economics.....	....	3
*Electives	9	2
Total	18	17

Senior Year

Bot. 125—Diseases of Fruit Crops.....	2	....
or		
Bot. 126—Diseases of Vegetable Crops.....	....	2
Hort. 101, 102—Technology of Fruits.....	2	2
or		
Hort. 103, 104—Technology of Vegetables.....	2	2
Zool. 104—Genetics	3	....
Bot. 115—Structure of Economic Plants.....	....	3
Hort. 118, 119—Seminar.....	1	1
*Electives	8	9
Total	16	17

*Electives must include a minimum total of seven credits from the following courses:
Hort. 11, 22, 62, 106, 107, 108, 114, 116 122.

Floriculture and Ornamental Horticultural Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Chem. 1, 3—General Chemistry.....	4	4
Bot. 11—Plant Taxonomy .....	....	3
Bot. 20—Diseases of Plants	3	....
Hort. 22—Landscape Gardening.....	2	....
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	19	17

Junior Year

Bot. 101—Plant Physiology	4	....
Bot. 111—Plant Anatomy	3	....
Bot. 123—Diseases of Ornamental Crops.....	....	2
Econ. 37—Fundamentals of Economics.....	....	3
Agron. 10—General Soils .....	....	4
Hort. 11—Greenhouse Management .....	....	3
Hort. 62—Plant Propagation	3	....
Hort. 107, 108—Plant Materials.....	3	3
Electives	5	2
Total	18	17

Senior Year

Speech 1, 2—Public Speaking.....	2	2
Zool. 104—Genetics	3	....
Hort. 16—Garden Flowers .....	....	3
Hort. 105—Technology of Ornamentals.....	2	....
Hort. 118, 119—Seminar	1	1
Hort. 150, 151—Commercial Floriculture.....	3	3
or		
Hort. 152, 153—Landscape Design.....	3	3
Electives	7	8
Total	17	16

Processing of Horticultural Crops Curriculum

Sophomore Year

Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Chem. 31, 33—Elements of Organic Chemistry.....	2	2
Chem. 32, 34—Elements of Organic Laboratory.....	1	1
Phys. 1, 2—Elements of Physics.....	3	3
Hort. 61—Processing Industries .....	....	1
Bact. 1—General Bacteriology.....	4	....
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	20	17

<i>Junior Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Speech 1, 2—Public Speaking.....	2	2
Agron. 10—General Soils.....	....	4
Econ. 37—Fundamentals of Economics.....	8	....
Hort. 155, 156—Commercial Processing.....	3	2
Bot. 101—Plant Physiology.....	4	....
Bact. 131—Food and Sanitary Bacteriology.....	4	....
Hort. 58—Vegetable Production.....	....	3
Zool. 1—General Zoology.....	....	4
Agr. Engr. 111—Mechanics of Food Processing.....	3	....
Agr. Engr. 112—Machinery and Equipment for Food Processing	....	2
Electives .....	....	3
Total	19	20

Senior Year

Hort. 103, 104—Technology of Vegetables.....	2	2
Hort. 121—Plant Operations	2	....
Hort. 123—Grading and Judging of Canned and Frozen Products	....	2
Hort. 124—Quality Control	3	....
Hort. 118, 119—Seminar	1	1
and one of the following options:		
MANAGEMENT (Option)		
Econ. 160—Labor Economics.....	3	....
B. A. 150—Market Management	3	....
B. A. 160—Personnel Management .....	....	3
Electives .....	....	6
TECHNOLOGY (Option)		
Chem. 19—Quantitative Analysis.....	4	....
Hort. 126—Nutritional Analyses of Processed Crops.....	....	2
Electives	2	7
Total	14	14

POULTRY HUSBANDRY

The curriculum in Poultry Husbandry is designed to give the student a thorough knowledge of subject matter necessary for poultry raising; the marketing, distribution, and processing of poultry products; poultry improvement work; and as a basis for graduate training of teaching and research in poultry husbandry.

The suggested curriculum will be modified to meet the special needs of individual students. Superior students, definitely anticipating preparation for a professional career in poultry husbandry, will be expected to take a language. However, all students majoring in poultry husbandry will be required to complete 24 semester hours in poultry husbandry.

Poultry Curriculum*

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4 or 5, 6.....	3	3
Chem. 1, 3—General Chemistry.....	4	4
P. H. 2—Poultry Biology.....	....	2
Speech 1, 2—Public Speaking.....	2	2
H. 5, 6—History of American Civilization.....	3	3
Math. 5—General Mathematics.....	3	....
A. S. 3, 4—Elementary R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	19	18

Junior Year

P. H. 101—Poultry Nutrition	3	....
P. H. 102—Physiology of Hatchability.....	....	3
P. H. 100—Poultry Breeding .....	....	2
**Zool. 20—Vertebrate Embryology.....	....	4
Bact. 1—General Bacteriology.....	4	....
Zool. 104—Genetics	3	....
Econ. 37—Fundamentals of Economics.....	....	3
Agr. 100—Introductory Agricultural Biometrics.....	3	....
Eng. 7—Technical Writing.....	....	2
Electives	4	3
Total	17	17

Senior Year

P. H. 104—Technology of Market Eggs and Poultry.....	3	....
A. E. 117—Economics of Marketing Eggs and Poultry.....	....	3
V. S. 108—Avian Anatomy	3	....
V. S. 107—Poultry Hygiene .....	....	3
P. H. 103—Commercial Poultry Management.....	....	3
P. H. 107—Poultry Industrial and Economic Problems.....	2	....
Eng. Engr.—Elective	2-3	....
Electives	6-7	10
Total	17	19

Pre-Forestry Students

The College of Agriculture is glad to cooperate with any student who wishes to attend the University to pursue courses which may be transferred to a standard forestry curriculum in another institution. The program which a student follows depends to some extent upon the forestry college he plans to enter. All pre-forestry students in the College of Agriculture are sent to the Department of Botany of the University for counsel and advice in these matters.

*Students planning to pursue this curriculum should elect P. H. 1, the first semester of the Freshman year. If Agron. 1 is not elected in the Freshman year, it must be elected in a subsequent year.

**Required of students specializing in poultry genetics, physiology, or nutrition.

Pre-Theological Students

The College of Agriculture is glad to cooperate with the officers of any theological seminary who desire to urge its prospective students to pursue courses in agriculture as a preparation for the rural ministry. Such pre-theological students may enroll for a semester or more or for the usual four year training of the College. In either case they should enroll as members of the general curriculum in the College of Agriculture.

The electives of this curriculum may be used for such pre-theological requirements as seem desirable. Elections may be made from any of the offerings of the University such as history, political science, philosophy, agricultural economics, rural sociology, modern language, English, economics, psychology, sociology, natural science, education and the like. Students desiring to pursue a pre-theological program in the College of Agriculture of the University of Maryland, should consult with the president or admissions officer of the theological seminary which they expect to attend.

Pre-Veterinary Students

The College of Agriculture is glad to cooperate with any student who wishes to attend the University to pursue preparation for the study of Veterinary Science. The curriculum which a student will follow will depend to some extent upon the Veterinary College which he plans to enter. All Pre-Veterinary students in the College of Agriculture are sent to the Head of the Department of Veterinary Science of the University for counsel and advice in these matters.

Special Students in Agriculture

Mature students may, with consent of the Dean, register as special students and pursue a program of studies not included in any regular curriculum, but arranged to meet the needs of the individual. All university fees for these special students are the same as fees for regular students.

There are many young farmers who desire to take short intensive courses in their special lines of work during slack times on the farm. Arrangements have been made to permit such persons to register at the office of the Dean of the College of Agriculture and receive cards granting them permission to visit classes and work in the laboratories of the different departments. This opportunity is created to aid florists, poltrymen, and fruit-growers, gardeners, or other especially interested persons who are able to get away from their work at some time during the year.

The regular charges are \$10.00 for matriculation and \$2.00 per credit hour per month for the time of attendance. One matriculation is good for any amount of regular or intermittent attendance during a period of four years.

COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designed by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of hours' credit is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

AGRICULTURE

Agr. 1. Introduction to Agriculture (1).

First semester. Required of all beginning freshmen and sophomores in Agriculture. Other students must get the consent of the instructor. A series of lectures introducing the student to the broad field of agriculture. (Poffenberger.)

Agr. 100. Introductory Agricultural Biometrics (1).

First semester. Two lectures and one laboratory period per week. Introduction to fundamental concepts underlying the application of biometrical methods to agricultural problems with emphasis on graphical presentation of data, descriptive statistics, chi-square and t-tests, and linear regression and correlation. (Schultz.)

Agr. 200. Agricultural Biometrics (3).

Second semester. Two lectures and one laboratory period per week. Prerequisite, Agr. Biom. 100 or equivalent. A continuation of Agr. 100 with emphasis on analysis of variance and co-variance, multiple and curvilinear regression, sampling, experimental design and miscellaneous statistical techniques as applied to agricultural problems (Schultz.)

AGRICULTURAL ECONOMICS AND MARKETING

Professors Poffenberger, Beal, Walker; Visiting Professor Taylor; Associate Professors Hamilton, Shull, Smith; Assistant Professor Ishee, Wysong; Lecturer Whipple.

A. E. 50. Farm Economics (3).

Second semester. Prerequisite, Econ. 37. A general course in agricultural economics, with special reference to population trends, the factors in agricultural production, agricultural wealth, land tenure, farm labor, agricultural credit, the tariff, price movements, and marketing. (Taylor.)

For Advanced Undergraduates and Graduates

A. E. S100 A-B Special Problems in Farm Economics (1, 1).

Summer session only. An advanced course dealing extensively with some of the economic problems affecting the farmer, such as land values, taxation, credit, prices, production adjustments, transportation, marketing and cooperation. Designed primarily for teachers of vocational agriculture. (Staff.)

A. E. 101. Marketing of Farm Products (3).

Second semester. Prerequisite Econ. 31, 32, or Econ. 37. The development of marketing, its scope, channels, and agencies of distribution, functions, costs, methods used and services rendered. (Taylor.)

A. E. 103. Cooperation in Agriculture (3).

First semester. Historical and comparative development of farmers' cooperative organizations; reasons for failure and essentials to success; commodity developments; operative practices; banks for cooperatives; present trends. (Smith.)

A. E. 104. Farm Finance (3).

Second semester. A study of credit principles as applied to private and cooperative farm businesses and the agencies extending farm credit. The needs for and benefits of farm insurance, including fire, crop, livestock, and life insurance. (Ishee.)

A. E. 106. Prices of Farm Products (3).

Second semester. A general course in prices, price relationships, and price analysis, with emphasis on prices of agricultural products. (———)

A. E. 107. Analysis of the Farm Business (3).

First semester. A concise, practical course in the keeping, summarizing, and analyzing of farm accounts. (Hamilton.)

A. E. 108. Farm Management (3).

Second semester. A study of the organization and operation of farms from the standpoint of efficiency, selection of farms, size of farms, leasing systems, and factors affecting profits. Students will make an analysis of the actual farm business and practices of different types of farms, and make specific recommendations as to how these farms may be organized and operate as successful businesses. (Hamilton.)

A. E. 109. Research Problems (1-2).

First and second semesters. With the permission of the instructor, students will work on any research problems in agricultural economics. There will be occasional class meetings for the purpose of making reports on progress of work. (Staff.)

A. E. 110. Seminar (1, 1).

First and second semesters. Students will prepare and present reports on economic literature and current agricultural economic problems. (Hamilton.)

A. E. 111. Land Economics (3).

First semester. A study of the principles, problems and policies in the utilization of land with special emphasis on agricultural land. (Ishee.)

A. E. 112. Economic Development of American Agriculture (3).

First semester. This course is designed to acquaint students with major economic development in American agriculture. It places particular emphasis upon the economic impact of major agricultural movements, such as, Colonial agrarianism, the disposition of the public domain, farm organizations, recent governmental farm programs and the relationship of agriculture to public affairs. (Beal.)

A. E. 114. Foreign Trade in Farm Products (3).

Second semester. Trends in world trade for agricultural products; the position of the United States in world trade of agricultural products; farm relief measures and international trade; reciprocal trade agreements; postwar developments. (Taylor.)

A. E. 115. Marketing of Dairy Products (3).

First semester. A study of principles and practices in the marketing of milk and manufactured dairy products, including the influence of significant geographical and institutional relationships on costs and methods of distribution. (Beal.)

A. E. 116. Marketing of Fruits and Vegetables (3).

Second semester. A study of principles and practices in the marketing of fresh and processed fruits and vegetables, including the influence of significant geographical and institutional relationships on costs and methods of distribution. (———)

A. E. 117. Economics of Marketing Eggs and Poultry (3).

Second semester. This course embraces the economic phases of egg and poultry marketing. Supply and demand factors, including trends, will be discussed along with marketing methods, marketing costs and margins, market facilities, transportation, government grading, storage and efficiency in marketing. Consumer preference, acceptance and purchases will be related to consumer income, pricing of competitive products, and display methods. (Smith.)

A. E. 118. Foreign Agricultural Policies (3).

First semester. This course covers the framework within which the foreign agricultural policy of the United States and major foreign countries is formulated. Special emphasis will be given to the importance of imports and exports to the agricultural economy of the United States and other countries. The effect of various incentives and barriers to world trade will be appraised. (Whipple.)

A. E. 119. Foreign Agricultural Economics (3).

Second semester. This course deals with factors affecting variations between nations in agricultural production, consumption and trade of principal crop and livestock products. Emphasis will also be given to land tenure, population trends, agricultural wealth, price movements and marketing. (Whipple.)

Technology of Market Eggs and Poultry.

See Poultry Husbandry, P. H. 104.

Poultry Industrial and Economic Problems.

See Poultry Husbandry, P. H. 107.

Market Milk.

See Dairy 109.

Livestock Markets and Marketing.

See Animal Husbandry, A. H. 150.

Meat and Meat Products.

See Animal Husbandry, A. H. 160.

Advertising.

See Business Administration, B. A. 151.

Retail Store Management.

See Business Administration, B. A. 154.

For Graduates**A. E. 200, 201. Special Problems in Farm Economics (2, 2).**

First and second semesters. An advance course dealing extensively with some of the economic problems affecting the farmer, such as land values, taxation, credit, prices, production adjustments, transportation, marketing, and cooperation. (Staff.)

A. E. 203. Research.

Credit according to work accomplished. This course will consist of special reports by students on current economic subjects, and a discussion and criticism of the same by the members of the class and instructional staff. (Staff.)

A. E. 202. Seminar (1, 1).

First and second semesters. Students will be assigned research in agricultural economics under the supervision of the instructor. The work will consist of original investigation in problems of agricultural economics. (Staff.)

A. E. S207. Farm Business Analysis (1).

Summer session only. An advanced course dealing with farm records and accounts. Designed especially for teachers of agriculture and county agents. (Hamilton.)

A. E. 208. Agricultural Policy (3).

Second semester. The evolution of agricultural policy in the United States, emphasizing the origin and development of governmental programs, and their effects upon agricultural production, prices and income. (Beal.)

A. E. 210. Agricultural Taxation (3).

First semester. Principles, theory and practical problems of taxation applied to the field of agriculture; trends in farm taxes; farm tax burdens; equalizing and reducing farm tax burdens; taxation of farm cooperatives; forest lands and interstate agricultural commerce; application of income taxes and sales taxes to farmers; taxation of agriculture in foreign countries. (Walker.)

A. E. 211. Functional Aspects of Farm Taxation (3).

Second semester. Two lectures and one laboratory period a week. Taxation policies and inter-governmental allocations and grants-in-aid as they affect public services for rural people, with special emphasis on public education, public highways, public welfare, social security, public debt; and governmental research, extension, and regulatory activities directly concerning agriculture. (Walker.)

A. E. 214. Advanced Agricultural Marketing (3).

First semester. This course is designed to acquaint graduate students in agricultural marketing with the complex theoretical institutional and legal relationships which influence the marketing of agricultural products. It will deal with agricultural marketing in both domestic and foreign trade. (Staff.)

A. E. 215. Advanced Agricultural Cooperation (3).

First semester. An appraisal of agricultural cooperation as a means of improving the financial status of farmers. More specifically, the course includes a critical analysis and appraisal of specific types and classes of cooperatives. (———)

A. E. 216. Advanced Farm Management (3).

Second semester. An advanced course in farm organization and management which applies the economic principles of farm production to the operation of farms of different sizes, types, operations, and geographical locations. Consideration is also given to adjustments which have taken place in farming specific areas and probable changes in the future. (———)

A. E. S216 A-B. Advanced Farm Management (1, 1).

Summer session only. An advanced course in farm organization and management, especially designed for teachers of vocational agriculture. (Hamilton.)

A. E. 218. Agricultural Economics Research Techniques (3).

First semester. A study and an appraisal of agricultural economics research techniques. Experience is given in outlining and conducting research projects. A critical appraisal is made of methods of analysis and the presentation of results. (———)

A. E. 219. Advanced Land Economics (3).

Second semester. A critical analysis of the principles and problems in using and controlling land resources, including a review of land policies, is given, with special consideration being placed on the problems of submarginal lands, range lands, and water resources. Conservation of various land resources is appraised; problems of landed property are presented; and criteria essential to the development of a sound land policy are studied. (———)

AGRICULTURAL EDUCATION AND RURAL LIFE

Professors Ahalt, Cotterman; Assistant Professor Hopkins; Lecturer Warner.

For Advanced Undergraduates**R. Ed. 101. Teaching Farm Practicums and Demonstrations (2).**

First semester. Two laboratory periods a week. This course is designed to assist the student in relating the learning acquired with the problems of doing and demonstrating which he faces in the field and in the classroom as a teacher of agriculture. (Hopkins.)

R. Ed. 103. Practice Teaching (5).

First semester. Open only to students majoring in Agricultural Education who have a satisfactory scholastic average. Five weeks, full time. Under the direction of a supervising teacher and the supervision of a teacher-trainer the student is required to analyze and prepare special units of subject matter in agriculture, plan and teach lessons, supervise farming programs of students and otherwise perform the duties of a high school teacher of vocational agriculture. Not less than 125 clock hours, exclusive of observation, shall be required. (Ahalt.)

R. Ed. 104. Practice Teaching (1-4).

First and second semesters. Registration concurrent or after R. Ed. 103. One to four weeks full time. To provide students an opportunity to gain experience in farming program supervision, the opening of school, and in other teaching activities not generally a part of R. Ed. 103. (Ahalt.)

For Advanced Undergraduates and Graduates**R. Ed. 107. Observation and Analysis of Teaching in Agriculture (3).**

Second semester. Two lectures and one laboratory period a week. This course deals with an analysis of pupil learning in class groups. (Ahalt, Hopkins.)

R. Ed. 109. Teaching Secondary Vocational Agriculture (3).

First semester. A comprehensive course in the work of high school departments of vocational agriculture. It emphasizes particularly placement, supervised farming programs, the organization and administration of Future Farmer activities, and objectives and methods in all-day instruction. (Ahalt, Hopkins.)

R. Ed. 111. Teaching Young and Adult Farmer Groups (1).

First semester. Characteristics of young and adult farmer instruction in agriculture. Determining needs for and organizing a course; selecting materials for instruction; and class management. Emphasis is on the conference method of teaching. (Hopkins.)

R. Ed. 112. Departmental Management (1).

Second semester. One laboratory period a week. Prerequisites, R. Ed. 107 and 109, or permission of the head of the department. The analysis of administrative programs for high school departments of vocational agriculture. Investigations and reports.
(Ahalt, Hopkins.)

R. Ed. 114. Rural Life and Education (3).

Second semester. An intensive study of the educational agencies at work in rural communities, stressing an analysis of school patronage areas, the possibilities of normal life in rural areas, early beginnings in rural education, and the conditioning effects of educational offerings.
(Ahalt.)

R. Ed. 150. Extension Education (2).

Second semester. The Agricultural Extension Service as an educational agency. The history, philosophy, objectives, policy, organization, legislation and methods used in extension work.
(Warner.)

R. Ed. 160. Agricultural Information Methods (2).

First semester. General introduction to agricultural public relations programs, including writing for and use of newspapers, magazines, direct mail, radio, and television; and production and use of visual aids such as photographs, slides, exhibits, and posters.
(—————.)

For Graduates**R. Ed. 201, 202. Rural Life and Education (3,3).**

First and second semesters. Prerequisite, R. Ed. 114 or equivalent. A sociological approach to rural education as a movement for a good life in rural communities.
(Ahalt, Hopkins.)

R. Ed. 207, 208. Problems in Vocational Agriculture (2, 2).

First and second semesters. In this course special emphasis is placed upon the current problems facing teachers of vocational agriculture. It is designed especially for persons who have had several years of teaching experience in this field. (Ahalt, Hopkins.)

R. Ed. S207 A-B. Problems in Teaching Vocational Agriculture (1-1).

Summer session only. A critical analysis of current problems in the teaching of vocational agriculture with special emphasis upon recent developments in all-day programs.

R. Ed. S208. A-B. Problems in Teaching Farm Mechanics (1-1).

Summer session only. The latest developments in the teaching of Farm Mechanics. Various methods in use will be compared and studied under laboratory conditions.

R. Ed. S209. A-B. Adult Education in Agriculture (1-1).

Summer session only. Principles of adult education as applied to rural groups, especially young and adult farmers. Organizing classes, planning courses and instructional methods are stressed.

R. Ed. S210. A-B. Land Grant College Education (1-1).

Summer session only. Development of Land Grant Colleges and Experiment Stations and the role they have played in improving conditions in rural communities.

R. Ed. S211 A-B. Agricultural Extension Service Education (1-1).

Summer session only. Development of the extension service. Types of demonstrations and instruction used. The role of the County Agricultural and Home Demonstration Agents and 4-H Clubs in the development of rural society.

R. Ed. S212 A-B. Educational Functions of Rural Institutions (1-1).

Summer session only. The part of rural institutions in developing and supporting education for rural areas, with special emphasis on the various phases of agricultural education.

R. Ed. S213 A-B. Supervision and Administration of Vocational Agriculture (1-1).

Summer session only. Administrative and supervisory problems in Vocational Agriculture including scheduling, local administrative programs, supervisor-teacher relationships and the responsibilities of superintendents and principals in the program.

R. Ed. 215. Supervision of Student Teaching (1).

Arranged. The role of the supervising teacher in checking progress, supervising and grading student teachers. Particular emphasis will be given to the region-wide program in training teachers of vocational agriculture, including the evaluation of beginning teachers. (Ahalt.)

R. Ed. 220. Field Problems in Rural Education (1-3).

First and second semesters. Prerequisite, six semester hours of graduate study. Problems accepted depend upon the character of the work of the student and the facilities available for study. Periodic conferences required. Final report must follow accepted pattern for field investigations. (Ahalt, Hopkins.)

R. Ed. 240. Agricultural College Instruction (1).

Second semester. Open to graduate students and members of the faculty in the College of Agriculture. A seminar type of course consisting of reports, discussions, and lectures dealing with the techniques and procedures adapted to teaching agricultural subjects at the college level. (Cotterman, Ahalt.)

R. Ed. 250. Seminar in Rural Education (1-1).

First and second semesters. Problems in the organization, administration, and supervision of the several agencies of rural education. Investigations, papers, and reports. (Staff.)

R. Ed. S250. A-B. Seminar in Rural Education (1-1).

Summer session only. Current problems of teaching agriculture are analyzed and discussed. Students are required to making investigations, prepare papers and make reports.

R. Ed. 215. Research.

Credit hours according to work done.

(Staff.)

AGRICULTURAL ENGINEERING

Professor Carpenter; Associate Professor Gienger; Assistant Professor Matthews; Instructor George.

For Advanced Undergraduates and Graduates

Agr. Engr. 101—Farm Machinery (3).

First semester. Two lectures and one laboratory period a week. A study of the economics, design and adjustments of modern horse and tractor-drawn machinery. Laboratory work consists of detailed study of actual machines, their calibration, adjustment, and repair. (George.)

Agr. Engr. 102. Gas Engines, Tractors and Automobiles (3).

Second semester. Two lectures and one laboratory period a week. A study of the design, operation, and repair of the internal combustion engines, tractors, and automobiles used in farm practice. (Matthews, Gienger.)

Agr. Engr. 104. Farm Mechanics (2).

First semester. Two laboratory periods a week. This course consists of laboratory exercises in practical farm shop and farm equipment repair and construction projects, and a study of the principles of shop organization and administration. It is available only to seniors in agricultural education. Laboratory fee, \$3.00. (Gienger.)

Agr. Engr. 105. Farm Buildings (2).

First semester. A study of all types of farm structures; also of farm heating, water supply and sanitation systems. (Carpenter.)

Agr. Engr. 106. Farm Mechanics (2).

Second semester. Two laboratory periods a week. Laboratory exercises covering practical projects in farm shop work and in the repair and construction of farm equipment. Laboratory fee, \$3.00. (Gienger.)

Agr. Engr. 107. Farm Drainage (2).

Second semester. One lecture and one laboratory period a week. A study of farm drainage systems, including theory of tile under-drainage, and depth and spacing of laterals, calculation of grades, methods of construction, and the use of engineering instruments. A smaller amount of time will be spent upon drainage by open ditches, and the laws relating thereto. (Carpenter.)

Agr. Engr. 109. Farm Applications of Electricity (2).

Second semester. One lecture and one laboratory period a week. This course covers the uses and applications of electricity on the farm and in the farm home. (George.)

Agr. Engr. 111. Mechanics of Food Processing (3).

First semester. Two lectures and one laboratory period a week. A basic study of mechanical principles and the practical application of these principles in the following phases of food processing; power generation and transmission, pumps, boilers, heat transfer, refrigeration, storage, and equipment controls. (Matthews.)

Agr. Engr. 112. Machinery and Equipment for Food Processing (2).

Second semester. One lecture and one laboratory period a week. Prerequisite, Agricultural Engineering III. This course covers the design, operation and maintenance of machines and equipment used in food processing and a study of the principles of efficient plant layout and management. (Matthews.)

AGRONOMY—CROPS AND SOILS

Professors Wagner and Street; Associate Professors Axley, Bentz and Bourbeau; Assistant Professors Decker, Newcomer, Santelmann and Strickling; Instructor Meade.

A. CROPS**Agron. 1. Crop Production (3).**

Second semester. Two lectures and one laboratory period a week. Culture, use, improvement, adaptation, distribution, and history of field crops. (Santelmann.)

For Advanced Undergraduates**Agron. 101. Senior Seminar (1).**

Second semester. Prerequisite, Agron. 1, 107, and 108. Reports by seniors on current scientific and practical publications pertaining to crops. (Santelmann.)

Agron. 153. Selected Crop Studies (1-2).

Second semester. Prerequisite, Agron. 1, 107, 108. Advanced individual study of field crops of special interest to the student.

For Advanced Undergraduates and Graduates**Agron. 103. Crop Breeding (2).**

First semester. Prerequisite, Zool. 104. (Not offered 1958-1959). The principles of breeding as applied to field crop plants and methods used in plant improvement. (———.)

Agron. 105. Tobacco Production (2).

First semester. Two lectures a week. A study of the history, adaptation, distribution, culture, and improvement of various types of tobacco, with special emphasis on problems in Maryland tobacco production. (Street.)

Agron. 106. Tobacco Production (2).

Second semester. Two lectures a week. A study of the physical and chemical factors associated with yield and quality of tobacco, stress being placed on the importance of soil, climate and fertilizers. (Street.)

Agron. 107. Cereal Crop Production (3).

First semester. Two lectures and one laboratory period a week. Prerequisite Bot. 1. (Not offered 1957-1958.) Study of the principles and practices of corn, wheat, oats, barley, rye, and soybean production. (Santelmann.)

Agron. 108. Forage Crop Production (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite Bot. 1. Study of the production and management of grasses and legumes for quality hay, silage and pasture. (Decker.)

Agron. 151. Cropping Systems (2).

Second semester. Two lectures a week. Prerequisite Agron. 1 or equivalent. The coordination of information from various courses in the development of balanced cropping systems, appropriate to different objectives in various areas of the State and Nation. (Wagner.)

Agron. 152. Seed Production and Distribution (3).

Second semester. Two lectures and one laboratory (2 hours) period a week. Prerequisite, Agron. 1 or equivalent. (Not offered 1958-1959.) A study of seed production, processing, and distribution; Federal and State seed control programs; seed laboratory analyses; release of new varieties and maintenance of foundation seed stocks. (Newcomer.)

Agron. 154. Weed Control in Field Crops (3).

First semester. Two lectures and one laboratory a week. Prerequisite, Agron. 1 or equivalent. (Not offered 1958-1959.) A study of the use of cultural practices and chemical herbicides in the control of weeds in field crops and turf. (Santelmann.)

For Graduates**Agron. 201. Advanced Crop Breeding (2).**

Second semester. Prerequisite, permission of instructor. (Not offered 1957-1958.) Similar to Agron. 103, but better adapted to graduate students and offering a wider range of choice of material to suit special cases. (———)

Agron. 203. Crop Seminar (1, 1).

First and second semesters. Presentation of original work or review of literature on agronomic topics. (Street.)

Agron. 204. Technic in Field Crop Research (2).

Second semester. (Not offered 1957-1958.) Field plot technic, application of statistical analysis to agronomic data, and preparation of the research project. (———)

Agron. 205. Biogenesis of Tobacco (2).

Second semester. Two lectures a week. Prerequisite, permission of instructor. (Not offered 1957-1958.) A study of the structural adaptation of tobacco to environmental and experimental variations (Street.)

Agron. 206, 207. Recent Advances in Crop Production (2, 2).

First semester. Two lectures a week. Prerequisite, permission of instructor. A study of recent advances in research techniques and findings pertaining to crop production. (Agron. 207; not offered in 1957-1958.) (Staff.)

Agron. 208. Research Methods (2-4).

Second semester. Prerequisite, permission of staff. Development of research viewpoint by detailed study and report on crop research of the Maryland Experiment Station or review of literature on specific phases of a problem. (Staff.)

Agron. 209. Research in Crops (1-8).

First and second semesters. Credit according to work accomplished. With approval or suggestion of the Professor in charge of his major work the student will choose his own problem for study. (Staff.)

Agron. S210. Cropping Systems (1).

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents. It deals with outstanding problems and the latest developments in the field. (Wagner.)

Agron. 211. Biosynthesis of Tobacco (2).

Second semester. Two lectures a week. Prerequisite, permission of instructor. (Not offered 1958-1959.) A study of the composition of tobacco with emphasis on the alkaloids and other unique components. (Street.)

B. SOILS**Agron. 10. General Soils (4).**

Second semester. Three lectures and a two-hour laboratory period each week. Prerequisite, Chem. 1 or permission of instructor. A study of the fundamentals of soils including their origin, development, relation to natural sciences, effect on civilization, physical properties, and chemical properties.

For Advanced Undergraduates and Graduates**Agron. S110. Soil Management (1).**

Summer school only. An advanced course primarily designed for teachers of Vocational Agriculture and County Agents dealing with factors involved in management of soils in general and of Maryland soils in particular. Emphasis is placed on methods of maintaining and improving chemical, physical, and biological characteristics of soils. (Strickling.)

Agron. 111. Soil Fertility Principles (3).

Second semester. Three lectures a week. Prerequisite, Agron. 10. A study of the chemical, physical, and biological characteristics of soils that are important in growing crops. Soil deficiencies of physical, chemical or biological nature and their correction by the use of lime, fertilizers, and rotations are discussed and illustrated. (Strickling.)

Agron. 112. Commercial Fertilizers (3).

Second semester. Three lectures a week. Prerequisite, Agron. 10 or permission of instructor. A study of the manufacturing and distribution of commercial fertilizers. (Axley.)

Agron. 113. Soil Conservation (3).

First semester. Two lectures and one three-hour laboratory a week. Prerequisite, Agron. 10 or permission of instructor. (Not offered 1957-1958.) A study of the importance and causes of soil erosion, and methods of soil erosion control. Special emphasis is placed on farm planning for soil conservation. The laboratory period will be largely devoted to field trips. (Bentz.)

Agron. 114. Soil Classification and Geography (4).

Second semester. Three lectures and one three-hour laboratory period a week. Prerequisite, Agron. 10, or permission of instructor. A study of the genesis, morphology, classification and geographic distribution of soils. The broad principles governing soil formation are explained. Attention is given to the influence of geographic factors on the development and use of soils in the United States and other parts of the world. The laboratory periods will be largely devoted to field trips and to a study of soil maps of various countries. (Bourbeau.)

Agron. 116. Soil Analysis for Plant Nutrients (3).

First semester. One hour lecture, one two-hour laboratory, and one three-hour laboratory a week. (Not offered 1957-1958.) A study of chemical methods for soil analysis and their relation to fertilizer requirements of plants grown in soil. (Axley.)

Agron. 117. Soil Physics (3).

First semester. Two lectures and one three-hour laboratory a week. Prerequisite, Agron. 10 and a course in Physics, or permission of instructor. (Not offered in 1958-1959.) A study of physical properties of soils with special emphasis on relationship to soil productivity. (Strickling.)

Agron. 118. Special Problems in Soils (1).

First and second semesters. Prerequisite, Agron. 10 and permission of instructor. A detailed study, including a written report, of an important soil problem. (Staff.)

Agron. 119. Soil Mineralogy (4).

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, permission of instructor. (Not offered in 1958-1959.) A study of the fundamental laws and forms of crystal symmetry and essentials of crystal structure; structure, occurrence, association and uses of minerals, determination of minerals by means of their morphological, chemical and other physical properties. Particular attention is given to soil-forming minerals. Laboratory periods will be devoted to a systematic study of about 75 minerals. (Bourbeau.)

For Graduates

Agron. 250. Advanced Soil Mineralogy (3).

First semester. Three one-hour lectures a week. Prerequisite, Agron. 10, Agron. 119 and permission of instructor. (Not offered 1957-1958.) A study of the structure, physical-chemical characteristics and identification methods of soil minerals, particularly to clay minerals, and their relationship to soil genesis and productivity. (Bourbeau.)

Agron. 251. Advanced Methods of Soil Investigation (3).

First semester. Three lectures a week. Prerequisite, Agron. 10 and permission of instructor. (Not offered 1958-1959.) An advanced study of the theory of chemical methods of soil investigation with emphasis on problems involving application of physical chemistry. (Axley.)

Agron. 252. Advanced Soil Physics (3).

Second semester. Two lectures and one three-hour laboratory a week. Prerequisites, Agron. 10 and permission of instructor. (Not offered 1958-1959.) An advanced study of physical properties of soils with special emphasis on relationship to soil productivity. (Strickling.)

Agron. 253. Advanced Soil Analysis for Plant Nutrients (3).

First semester. One lecture, one two-hour laboratory and one three-hour laboratory a week. Prerequisite, permission of instructor. (Not offered 1957-1958.) An advanced study of chemical methods for soil analysis and their relationship to fertilizer requirements of plants grown in soil. (Axley.)

Agron. 255. Soil Seminar (1, 1).

First and second semesters. Prerequisite, permission of instructor. (Bourbeau, Strickling.)

Agron. 256. Soil Research (1-12).

First and second semesters.

ANIMAL HUSBANDRY

Professors Foster, Green; Assistant Professors Buric, Leffel and Wingert

A. H. 1. Fundamentals of Animal Husbandry (3).

First semester. Two lectures and one laboratory period a week. A study of the general problems in breeding, feeding, management and marketing of beef cattle, sheep, swine and horses. Practice is given in the selection of animals to meet market demands. Field trips may be made to near-by farms and packing plants. (Staff.)

A. H. 30. Types and Breeds of Livestock (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite A. H. 1. A study of the various types and breeds of livestock, their development, characteristics and adaptability. Practice is given in selection according to standards of excellence. (Staff.)

A. H. 90. Livestock Judging (2).

Second semester. Two laboratory periods a week. Prerequisite, A. H. 30 or permission of instructor. Training is given in the judging of beef cattle, sheep, swine and horses. Occasional trips are made to farms where outstanding herds and flocks are maintained. (Buric.)

For Advanced Undergraduates**A. H. 100. Advanced Livestock Judging (2).**

First semester. Two laboratory periods a week. Prerequisite, A. H. 90 and permission of instructor. An advanced course in the selection and judging of purebred and commercial meat and work animals. The most adept students enrolled in this course are chosen to represent the University of Maryland in intercollegiate livestock judging contests. (Buric.)

A. H. 110. Feeds and Feeding (3).

First semester. Two lectures and one laboratory period a week. Prerequisites, Chem. 1, 3. Elements of nutrition; source, characteristics, and adaptability of the various feeds to the several classes of livestock; feeding standards; the calculation and compounding of rations. (Leffel.)

A. H. 130. Beef Cattle Production (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, A. H. 1, A. H. 110. Principles and practices underlying the economical production of beef cattle, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial herds. (Foster.)

A. H. 131. Sheep Production (3).

Second semester. Two lectures and one laboratory period a week. Prerequisites, A. H. 1, A. H. 110. Principles and practices underlying the economical production of sheep, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial flocks. (Leffel.)

A. H. 132. Swine Production (3).

Second semester. Two lectures and one laboratory period a week. Prerequisites, A. H. 1, A. H. 110. Principles and practices underlying the economical production of swine, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial herds. (Wingert.)

A. H. 134. Light Horse Production (1).

First semester. One lecture a week. Prerequisite, A. H. 1. Study of the light horse breeds with emphasis on the types and usefulness of each. A discussion of principles of selection and breeding of light horses is included in this course. (Leffel.)

A. H. 135. Light Horse Production (1).

Second semester. One lecture a week. Prerequisite, A. H. 1. Included is a study of the organization of the light horse farm, proper methods of feeding and training, control of disease, treatment and care of injuries, sale of surplus stock. (Leffel.)

A. H. 140. Livestock Management (3).

Second semester. One lecture and two laboratory periods a week. Prerequisite, A. H. 110. A course designed to offer practical experience in working with livestock, especially to students who lack farm experience. Provides opportunities for students to learn practical methods of handling and managing beef cattle, sheep, and swine. Practice and training in fitting animals for shows and sales. (Buric.)

A. H. 160. Meat and Meat Products (3).

First semester. One lecture and two laboratory periods a week. Prerequisite, A. H. 1. Designed to give information on the processing and handling of the nation's meat supply. A study of the physical and structural qualities which effect the value of meat and meat products. Trips are made to packing houses and meat distributing centers. (Wingert.)

A. H. 170, 171. Seminar (1, 1).

First and second semesters. Prerequisite, permission of instructor. Advanced undergraduates will be required to review literature, present reports and discuss assigned topics relating to Animal Husbandry. (Staff.)

A. H. 172, 173. Special Problems in Animal Husbandry (1-2, 1-2).

First and second semesters. Work assigned in proportion to amount of credit. Prerequisite, approval of staff. A course designed for advanced undergraduates in which specific problems relating to Animal Husbandry will be assigned. (Staff.)

For Advanced Undergraduates and Graduates**A. H. 111. Animal Nutrition (3).**

First semester. Three lectures a week. Prerequisites, Chem. 31, 32, 33, 34; A. H. 110. Graduate credit allowed, with permission of instructor. Processes of digestion, absorption, and metabolism of nutrients; nutritional balances; nature of nutritional requirements for growth, production and reproduction. (Lefell.)

A. H. 120. Principles of Breeding (3).

Second semester. Three lectures a week. Prerequisite, Zool. 104 and A. H. 130 or A. H. 131 or A. H. 132 or Dairy 101. Graduates credit (1-3 hours), allowed with permission of instructor. The practical aspects of animal breeding, heredity, variation, selection, development, systems of breeding, and pedigree study are considered. (Green.)

A. H. S130. Beef Cattle (1).

Summer session only. This course is designed primarily for teachers of Vocational Agriculture and Extension Service Workers. Principles and practices underlying the economical production of beef cattle, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial herds. (Foster.)

A. H. 150. Livestock Markets and Marketing (2).

First semester. Two lectures a week. Prerequisite, A. H. 1. Graduate credit allowed, with permission of instructor. History and development of livestock markets and systems of marketing; trends of livestock marketing; effect of changes in transportation and refrigeration facilities; the merchandising of meat products. (Wingert.)

For Graduates

A. H. 200, 201. Special Problems in Animal Husbandry (1-2, 1-2).

First and second semesters. Work assigned in proportion to amount of credit. Prerequisite, approval of staff. Problems will be assigned which relate specifically to the characters of work the student is pursuing. (Staff.)

A. H. 202, 203. Seminar (1, 1).

First and second semesters. Students are required to prepare papers based upon current scientific publications relating to Animal Husbandry or upon their research work, for presentation before and discussion by the class. (Staff.)

A. H. 204. Research (1-6).

First and second semesters. Credit to be determined by amount and character of work done. With the approval of the head of the department, students will be required to pursue original research in some phase of Animal Husbandry, carrying the same to completion, and report the results in the form of a thesis. (Staff.)

A. H. 205. Advanced Breeding (2).

Second semester. Two lectures a week. Prerequisites, A. H. 120 or equivalent and Biological Statistics. This course deals with the more technical phases of heredity and variation; selection indices; breeding systems; inheritance in farm animals. (Green.)

A. H. 206. Advanced Livestock Management (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, approval of staff. An intensive study of the newer developments in animal breeding, animal physiology, animal nutrition, endocrinology, and other closely allied fields as they apply to the management and commercial production of livestock. (Staff.)

BOTANY

Professors Bamford, Gauch, Cox, Weaver; Associate Professors Brown, D. T. Morgan, Rappleye, Krauss; Assistant Professors O. D. Morgan, Sisler, Jenkins; Instructors Kantzes, Wilson, Paterson

Bot. 1. General Botany (4).

First and second semesters. Summer. Two lectures and two laboratory periods a week. General introduction to botany, touching briefly on all phases of the subject. Emphasis is on the fundamental biological principles of the higher plants. Laboratory fee, \$5.00.

Bot. 2. General Botany (4).

Second semester. Two lectures and two laboratory periods a week. Prerequisite, Bot. 1 or equivalent. A brief evolutionary study of algae, fungi, liverworts, mosses, ferns and their relatives, and the seed plants emphasizing their structure, reproduction, habitats, and economic importance. Laboratory fee, \$5.00.

Bot. 11. Plant Taxonomy (3).

Second semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 1, or equivalent. A study of the principles of plant classification, based on the collection and identification of local plants. Laboratory fee, \$5.00.

Bot. 20. Diseases of Plants (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1, or equivalent. An introductory study of the symptoms and causal agents of plant diseases and measures for their control. Laboratory fee, \$5.00.

For Advanced Undergraduates**Bot. 110. Plant Microtechnique (3).**

Second semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 1. Principles and methods involved in the preparation of permanent microscope slides of plant materials. Laboratory fee, \$5.00. (Rapple and Paterson.)

Bot. 112. Seminar (1).

First and second semesters. Prerequisite, permission of instructor. Discussion of special topics, current literature, problems and programs in all phases of botany. For seniors only, majors and minors in botany or biological science. (Brown.)

A. Plant Physiology**For Advanced Undergraduates and Graduates****Bot. 101. Plant Physiology (4).**

First semester. Two lectures and two laboratory periods a week. Prerequisites, Bot. 1 and General Chemistry. A survey of the general physiological activities of plants. Laboratory fee, \$5.00. (Gauch and Krauss.)

Bot. 102. Plant Ecology (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 11, or equivalent. A study of plants in relation to their environments. Plant successions and formations of North America are treated briefly and local examples studied. Laboratory fee, \$5.00. (Brown.)

For Graduates**Bot. 200. Plant Biochemistry (2).**

First semester. Prerequisites, Bot. 101 and elementary organic chemistry, or equivalent. A study of the important substances in the composition of the plant body and the chemical changes occurring therein. (Gauch.)

Bot. 201. Plant Biochemistry Laboratory (2).

First semester. Two laboratory periods a week. Prerequisites, Bot. 200 or concurrent registration therein. Application of apparatus and techniques to the study of the chemistry of plant materials. Laboratory fee, \$10.00. (Gauch.)

Bot. 202. Plant Biophysics (2).

Second semester. Prerequisite, Bot. 101 and introductory physics, or equivalent. An advanced course dealing with the operation of physical phenomena in plant life processes.

Bot. 203. Biophysical Methods (2).

Second semester. Two laboratory periods a week. Laboratory course to accompany Bot. 202. Laboratory fee, \$10.00.

Bot. 204. Growth and Development (2).

First semester. Prerequisite, 12 semester hours of plant science. (Krauss.)

Bot. 205. Mineral Nutrition of Plants (2).

Second semester. (Not offered 1957-1958). Reports on current literature are presented and discussed in connection with recent advances in the mineral nutrition of plants. (Gauch.)

Bot. 206. Research in Plant Physiology.

Credit according to work done. Students must be qualified to pursue with profit the research to be undertaken. (Gauch, Krauss.)

Bot. 207. Special Topics in Plant Physiology (2).

Second semester. Prerequisite, permission of instructor. This course on highly specialized subjects, usually will be presented by a specialist who is available at a neighboring institution.

Bot. 208. Seminar in Plant Physiology (1).

First and second semesters. Prerequisite, permission of instructor. Discussion of special topics in plant physiology. (Gauch, Krauss.)

Bot. 209. Physiology of Algae (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 201, the equivalent in allied fields, or permission of the instructor. A study of the physiology and comparative biochemistry of the algae. Laboratory techniques and recent advances in algal nutrition, photosynthesis, and growth will be reviewed. Laboratory fee, \$10.00. (Krauss.)

B. Plant Morphology and Taxonomy**For Advanced Undergraduates and Graduates****Bot. 111. Plant Anatomy (3).**

First semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 110, or equivalent. The origin and development of the organs and tissue systems in the vascular plants. Laboratory fee, \$5.00. (Rapplee.)

Bot. 113. Plant Geography (2).

First semester. Prerequisite, Bot. 1, or equivalent. A study of plant distribution throughout the world and the factors generally associated with such distribution.

(Brown.)

Bot. 114. Advanced Plant Taxonomy (3).

First semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 11, or permission of instructor. Principles and criteria of systematic botany. Study of difficult plant groups, especially grasses, sedges, legumes and composites with collection and identification of native species. Laboratory fee, \$5.00.

(Brown.)

Bot. 115. Structure of Economic Plants (3).

Second semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 111. A detailed microscopic study of the anatomy of the chief fruit and vegetable crops. Laboratory fee, \$5.00.

(Rapplee.)

Bot. 116. History and Philosophy of Botany (1).

First semester. Prerequisite, 15 semester hours of botany. (Not offered 1957-1958.) Discussion of the development of ideas and knowledge about plants, leading to a survey of contemporary work in botanical science.

(Bamford.)

Bot. 117. Plant Breeding (2).

Second semester. Prerequisite, Zool. 104 or equivalent. A survey of the fundamental principles to modern plant breeding. The analysis of hybrid vigor, its application to economic plants, the relation of chromosomes to plant improvement, economically valuable mutations and similar topics will be considered.

(D. T. Morgan.)

Bot. 135. Aquatic Plants (3).

First semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 1 and Bot. 11, or equivalent. (Not offered 1957-1958.) A study of the taxonomy and ecology of aquatic plants, especially those of importance in fisheries and wild life management. Field trips and collections will be made. Laboratory fee, \$5.00.

Bot. 136. Plants and Mankind (2).

First semester. Prerequisite, Bot. 1 or equivalent. A survey of the plants which are utilized by man; the diversity of such utilization, and their historic and economic significance.

(Rapplee.)

Bot. 151S. Teaching Methods in Botany (2).

Summer. Five two-hour laboratory and demonstration periods per week; 10:00-11:00; E-307. Prerequisite, Bot. 1, or equivalent. (Not offered 1957.) Laboratory fee, \$5.00. A study of the biological principles of common plants, and demonstrations, projects, and visual aids suitable for teaching in primary and secondary schools.

For Graduates

Bot. 211. Cytology (3).

First semester. Two lectures and two laboratory periods a week. Prerequisite, Zool. 104 (Genetics) or equivalent. (Not offered 1957-1958.) A detailed study of the chromosomes in mitosis and meiosis, and the relation of these to current theories of heredity and evolution. Laboratory fee, \$10.00. (Bamford, D. T. Morgan.)

Bot. 212. Plant Morphology (3).

First semester. One lecture and two laboratory periods a week. Prerequisites, Bot. 11, Bot. 111, or equivalent. (Not offered 1957-1958.) A comparative study of the morphology of the flowering plants, with special reference to the phylogeny and development of floral organs. Laboratory fee, \$5.00. (Rapplee.)

Bot. 213. Seminar in Plant Cytology and Morphology (1).

First and second semesters. Prerequisite, permission of instructor. Discussion of special topics in plant morphology, anatomy, and cytology. (D. T. Morgan, Rapplee.)

Bot. 214. Research in Plant Cytology and Morphology.

Credit according to work done.

(Bamford, D. T. Morgan, Rapplee.)

Bot. 215. Plant Cytogenetics (3).

First semester. Two lectures and one laboratory period a week. Prerequisites, Zool. 104, (Genetics) or equivalent. An advanced study of the current status of plant genetics, particularly gene mutations and their relation to chromosome changes in corn and other favorable genetic materials. Laboratory fee, \$10.00. (D. T. Morgan.)

Bot. 219. Special Topics in Plant Morphology and Cytology (2).

First semester. Prerequisite permission of instructor. This course treats specialized subjects very intensively. It will usually be given by a lecturer from a neighboring institution.

C. Plant Pathology

For Advanced Undergraduates and Graduates

Bot. 122. Research Methods in Plant Pathology (2).

First or second semester. Two laboratory periods a week. Prerequisite, Bot. 20, or equivalent. Advanced training in the basic research techniques and methods of plant pathology. Laboratory fee, \$5.00 each semester. (Jenkins.)

Bot. 123. Diseases of Ornamental Plants (2).

Second semester. Prerequisite, Bot. 20, or equivalent. Symptoms, control measures, and other pertinent information concerning the diseases which affect important ornamental plants grown in the eastern states. (Wilson.)

Bot. 124. Diseases of Tobacco and Agronomic Crops (2).

First semester. Prerequisite, Bot. 20, or equivalent. (Not offered 1957-1958.) The symptoms and control of the diseases of tobacco, forage crops and cereal grains.
(O. D. Morgan.)

Bot. 125. Diseases of Fruit Crops. (2).

First semester. Prerequisite, Bot. 20, or equivalent. Symptoms and control of the diseases affecting fruit production in the eastern United States.
(Weaver.)

Bot. 126. Diseases of Vegetable Crops (2).

Second semester. Prerequisite, Bot. 20, or equivalent. (Not offered 1957-1958.) The recognition and control of diseases affecting the production of important vegetable crops grown in the eastern United States.
(Cox.)

Bot. 128. Mycology (4).

Second semester. Two lectures and two laboratory periods a week. Prerequisite, Bot. 2, or equivalent. An introductory study of the morphology, classification, life histories, and economics of the fungi. Laboratory fee, \$5.00.
(Wilson.)

Bot. 141. Nematode Disease of Plants (2).

First semester. Prerequisite, Bot. 20 or permission of instructor. Designed to acquaint students in agricultural sciences with the role of nematodes as plant pathogens; study of representative diseases caused by nematodes; principles and practice of control.
(Jenkins.)

Bot. 152S. Field Plant Pathology (1).

Summer. Daily lecture first three weeks, 8:00; E-307. Prerequisite, Bot. 20, or equivalent. Laboratory fee, \$5.00. (Not offered 1957.) A course for county agents and teachers of vocational agriculture. Discussion and demonstration of the important diseases in Maryland crops.
(Cox and Staff.)

For Graduates**Bot. 221. Virus Diseases (3).**

Second semester. Two lectures and one laboratory period a week. Prerequisites, Bot. 20 and Bot. 101. (Not offered 1957-1958.) Laboratory fee, \$10.00. Consideration of the physical, chemical and physiological aspects of plant viruses and plant diseases.
(Sisler.)

Bot. 223. Physiology of Fungi (2).

First semester. Prerequisites, Organic Chemistry and Bot. 101 or the equivalent in bacterial or animal physiology. (Not offered 1957-1958.) A study of various aspects of fungal metabolism, nutrition, biochemical transformations, fungal products, and mechanism of fungicidal action.
(Sisler.)

Bot. 224. Physiology of Fungi Laboratory (1).

First semester. One laboratory period per week. Prerequisite, Bot. 223 or concurrent registration therein. (Not offered 1957-1958.) Application of equipment and techniques in the study of fungal physiology. Laboratory fee, \$10.00. (Sisler.)

Bot. 225. Research in Plant Pathology.

Credit according to work done.

(Staff.)

Bot. 226. Plant Disease Control (3).

First semester. Prerequisite, Bot. 20, or equivalent. An advanced course dealing with the theory and practices of plant disease control. (Cox.)

Bot. 228. Special Topics in Plant Pathology (2).

Second semester. Prerequisite, permission of instructor. This course on very specialized phases of plant pathology will usually be given by a lecturer from a neighboring institution.

Bot. 229. Seminar in Plant Pathology (1).

First and second semesters. Discussion on the advanced technical literature of plant pathology. (Cox.)

Bot. 241. Plant Nematology (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, permission of instructor. Detailed of the nematodes parasitic on plants, their general morphology, taxonomy, reproduction, embryology, physiology, and ecology. Special emphasis will be given to recent advances in plant nematology. Laboratory fee, \$10.00 (Jenkins.)

DAIRY

Professors Arbuckle, and Shaw; Associate Professors Davis, Keeney, and Mattick; Instructor Seely

A. DAIRY HUSBANDRY**Dairy 1. Fundamentals of Dairying (3).**

Second semester. Two lectures and one laboratory period a week. This course is designed to cover the entire field of dairying. The content of the course deals with all phases of dairy cattle feeding, breeding and management and the manufacturing, processing, distribution and marketing of dairy products. Laboratory fee, \$3.00. (Davis, Mattick.)

Dairy 10. Dairy Cattle Management (1).

First semester. One laboratory period a week. Prerequisite, Dairy 1. A management course designed to familiarize students with the practical handling and management of dairy cattle. Students are given actual practice and training in the University dairy barns. (Davis.)

Dairy 20. Dairy Breeds and Selection (2).

First semester. One lecture and one laboratory period a week. A detailed study of the dairy breeds, factors which have contributed to the success and failure of modern breeding establishments and standards of excellence in the selection of breeding cattle.
(Davis.)

Dairy 30. Dairy Cattle Judging (2).

Second semester. Two laboratory periods a week. This course offers complete instruction in the selection and comparative judging of dairy cattle. Trips to various dairy farms for judging practice will be made.
(Davis.)

For Advanced Undergraduates and Graduates**Dairy 101. Dairy Production (3).**

First semester. Two lectures and one laboratory period a week. Prerequisites, Dairy 1, A. H. 110. A comprehensive course in dairy cattle nutrition feeding, and herd management.
(Davis.)

Dairy 103. Physiology of Milk Secretion (3).

Second semester. Two lectures and one laboratory period per week. Prerequisites, Zool. 1, Organic Chemistry. (Alternate years, given in 1957-1958.) The anatomy, evolution and metabolism of the mammary gland including hormonal control and the biosynthesis of milk constituents.
(Shaw.)

Dairy 105. Dairy Cattle Breeding (3).

Second semester. Two lectures and one laboratory period a week. Prerequisites, Dairy 1, Zool. 104. (Alternate years given in 1956-1957.) A specialized course in breeding dairy cattle. Emphasis is placed on methods of sire evaluation, system of breeding, breeding programs, and artificial breeding techniques.
(Davis.)

Dairy 120. Dairy Seminar (1).

Second semester. Prerequisites, students majoring in dairy production, Dairy 101; students majoring in dairy products technology, Dairy 108. Presentation and discussion of current literature and research work in dairying.
(Staff.)

Dairy 124. Special Problems in Dairying A (1-4).

First and second semesters. Prerequisite, Dairy 101. Credit in accordance with the amount and character of work done. Special problems will be assigned which relate specifically to the work the student is pursuing.
(Staff.)

B. DAIRY TECHNOLOGY**Dairy 40. Grading Dairy Products (2).**

Second semester. Two laboratory periods a week. Market grades and the judging of milk, butter, cheese, and ice cream. Laboratory fee, \$3.00.
(Arbuckle.)

For Advanced Undergraduates and Graduates

Dairy 108. Dairy Technology (4).

First semester. Two lectures and two laboratory periods a week. Prerequisites, Dairy 1, Bact. 133, Chem. 1, 3. Composition standards for milk and milk products, critical interpretation and application of practical factory methods of analyses for fat and solids; quality tests. Laboratory fee, \$3.00. (Keeney.)

Dairy 109. Market Milk (4).

First semester. Two lectures and two laboratory periods a week. Prerequisites, Dairy 1, Bact. 133, Chem. 1, 3. Commercial aspects of the market milk industry relating to transportation, processing, and distribution; operation of a market milk plant; quality problems; chocolate milk, buttermilk and cottage cheese. Laboratory fee, \$3.00. (Mattick.)

Dairy 110. Concentrated Milk, Cheese and Butter (4).

Fall semester. Two lectures and one five-hour laboratory a week. Prerequisites, Dairy 1, Bact. 133 or equivalent; Chem. 1 and 3. Methods of production of butter, cheese, condensed and evaporated milk and milk products. Consideration is given to the procedures of processing, quality control and the physio-chemical principles involved. Laboratory fee, \$3.00. (Mattick.)

Dairy 112. Ice Cream Making (4).

Second semester. Two lectures and two laboratory periods a week. Prerequisite, Dairy 108. The ice cream industry; commercial methods of manufacturing ice cream; fundamental principles; ingredients; controlling quality. Laboratory fee, \$3.00. (Arbuckle.)

Dairy 114. Special Laboratory Methods (4).

Second semester. Two lectures and two laboratory periods a week. Prerequisites, Dairy 108, Bact. 133, Chem. 19, 31, 32, 33, 34. Application of analytical methods to milk, milk products and milk constituents. Laboratory fee, \$3.00. 8 (Keeney.)

Dairy 116. Dairy Plant Management (3).

Second semester. Two lecture periods and one three-hour laboratory period per week. Prerequisites, at least three advanced dairy products technology courses. Principles of dairy plant management, record systems; personnel, plant design and construction; dairy machinery and equipment. (Mattick.)

Dairy 124. Special Problems in Dairying B (1-4).

First and second semesters. Prerequisites, Dairy 108, 109. Credit in accordance with the amount and character of work done. Special problems will be assigned which relate specifically to the work the student is pursuing. (Staff.)

For Graduates in Dairy Husbandry and Dairy Technology

Dairy 201. Advanced Ruminant Nutrition (3).

First semester. Three one-hour lectures per week. Prerequisites, A. H. 110 or Dairy 101, Organic Chemistry and permission of Department. (Alternate years, given in 1956-1957.) Biochemical, physiological and bacteriological aspects of the nutrition of ruminants and other animals. (Shaw and Davis.)

Dairy S201. Advanced Dairy Production (1).

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents. It includes a study of the newer discoveries in dairy cattle nutrition, breeding and management. (Staff.)

Dairy 202. Advanced Dairy Technology (3).

First semester. Prerequisite, Dairy 108, 114 or equivalent. Milk and milk products from physio-chemical and bio-chemical points of view, with attention directed to hydrogen ion concentration, electrometric titration, oxidation-reduction, electrometric conductivity, buffer system of milk, milk enzymes. (Kenney.)

Dairy 204. Special Problems in Dairying (1-5).

First and second semesters. Prerequisite, permission of Professor in charge of work. Credit in accordance with the amount and character of work done. Methods of conducting dairy research and the presentation of results are stressed. A research problem which relates specifically to the work the student is pursuing will be assigned. (Staff.)

Dairy 205. Seminar (1).

First semester. Assigned readings in current literature on timely topics; preparation and presentation of reports for classroom discussion. (Staff.)

Dairy 206. Advanced Dairy Research Seminar (1).

Second semester. Discussion of fundamental research in Dairy Science.

Dairy 208. Research (1-8).

First and second semesters. Credit to be determined by the amount and quality of work done. Original investigation by the student of some subject assigned by the Major Professor, the completion of the assignment and the preparation of a thesis in accordance with requirements for an advanced degree. (Staff.)

ENTOMOLOGY

Associate Professor Bickley; Assistant Professors Abrams, Harrison, Haviland, Johnson; Lecturers Munson, Sailer, Shepard.

Ent. 1. Introductory Entomology (3).

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, one semester of college Zoology. Laboratory fee, \$3.00. The position of insects in the animal kingdom, their gross structure, classification into orders and principal families and the general economic status of insects. A collection of common insects is required.

Ent. 2. Insect Morphology (3).

First semester. One lecture and two laboratory periods a week. Prerequisite, Ent. 1. Laboratory fee, \$3.00. Intensive study of the external structures and less intensive study of the internal anatomy of representative insects with special reference to those phases needed for work in insect taxonomy and biology.

Ent. 3. Insect Taxonomy (3).

Second semester. One lecture and two laboratory periods a week. Prerequisite, Ent. 2. Laboratory fee, \$3.00. Intensive study of the classification of all orders and the important families based on individual collections supplemented by typical material from the department collection.

Ent. 4. Beekeeping (2).

First semester. A study of the life history, behavior and seasonal activities of the honey-bee, its place in pollination of flowers with emphasis on plants of economic importance and bee lore in literature.

Ent. 11S. Entomology in Nature Study (3).

Summer. Two lectures and three two-hour laboratory periods per week. This course is designed to help teachers utilize insects in their teaching. The general availability of insects makes them especially desirable for use in nature study courses. Teachers should be acquainted, therefore, with the simplest and easiest ways to collect, rear, preserve, and identify the common insects about which students are constantly asking questions.

For Advanced Undergraduates and Graduates**Ent. 100. Advanced Apiculture (3).**

Second semester. One lecture and two three-hour laboratory periods. Prerequisite, Ent. 4. Laboratory fee, \$3.00. The theory and practice of apiculture management. Designed for the student who wishes to keep bees or requires a practical knowledge of bee management. (Abrams.)

Ent. 101. Economic Entomology (3).

Second semester. Prerequisite, consent of the department. (Not offered in 1957-1958.) An intensive study of the theory and problems of applied entomology, including life history, ecology, behavior, distribution, parasitism and control.

Ent. 105. Medical Entomology (3).

First semester. Two lectures and one two-hour laboratory period a week. Prerequisite, Ent. 1, or consent of the department. Laboratory fee, \$3.00. A study of insects and related arthropods that affect the health and comfort of man directly and as vectors of disease. In discussions of the control of such pests the emphasis will be upon community sanitation. (Bickley.)

Ent. 106. Advanced Insect Taxonomy (3).

First semester. Two three-hour laboratory periods a week. Prerequisite, Ent. 3. Laboratory fee, \$3.00 (Not offered in 1957-1958.) Principles of systematic entomology and intensive study of limited groups of insects, including immature forms. (Bickley.)

Ent. 107. Insecticides (2).

Second semester. Prerequisite, consent of the department. The development and use of contact and stomach poisons, fumigants and other important chemicals, with reference to their chemistry, toxic action, compatibility, and host injury. Recent research emphasized. (Shepard.)

Ent. 109. Insect Physiology (2).

Second semester. Two lectures and occasional demonstrations. Prerequisite, consent of the department. The functioning of the insect body with particular reference to blood, circulation, digestion, absorption, excretion, respiration, reflex action and the nervous system, and metabolism. (Munson.)

Ent. 110, 111. Special Problems (1, 1).

First and second semesters. Prerequisites, to be determined by the department. May be taken concurrently. An intensive investigation of some entomological problem, preferably of the student's choice. Required of majors in entomology. (Staff.)

Ent. 112. Seminar (1, 1).

First and second semesters. Prerequisite, senior standing. Presentation of original work, reviews and abstracts of literature. (Staff.)

Ent. 113. Entomological Literature (1).

Second semester. Prerequisite, junior standing. (Not offered in 1957-1958.) A study of entomological publications and good scientific writing. Preparation of bibliographies. (Bickley.)

Ent. 115. Quarantine Procedures (2).

Second semester. Prerequisite, consent of the department. Lectures on the principles and procedures involved in preventing the introduction of foreign pests and the limitation of spread of endemic or introduced pests. (Johnson.)

Ent. 116. Insect Pests of Ornamentals and Greenhouse Plants (3).

Second semester. Two lectures and one two-hour laboratory period a week. Prerequisite, Ent. 1 or consent of the department. Laboratory fee, \$3.00. The recognition, biology, and control of insects injurious to plants grown in ornamental plantings, nurseries, and under glass. (Haviland.)

Ent. 117. Insect Pests of Field Crops and Stored Products (2).

First semester. One lecture and one two-hour laboratory period a week. Prerequisite, Ent. 1 or consent of the department. Laboratory fee, \$3.00. (Not offered in 1957-1958.) The recognition, biology and control of insects injurious to corn, small grains, legumes, cotton, tobacco, stored grains, seeds and cereal products. (Harrison.)

Ent. 118. Insect Pests of Fruit and Vegetable Crops (3).

Second semester. Two lectures and one two hour-laboratory period a week. Prerequisite, Ent. 1 or consent of the department. Laboratory fee, \$3.00. The recognition, biology and control of insects injurious to important fruit and vegetable crops. (Harrison.)

Ent. 119. Insect Pests of Domestic Animals (2).

First semester. One lecture and one two-hour laboratory period a week. Prerequisite, Ent. 1 or consent of the department. Laboratory fee, \$3.00. The recognition, biology, and control of insects and related arthropods injurious to horses, cattle, hogs, sheep, goats, and poultry. (Haviland.)

For Graduates

Ent. 201. Advanced Entomology.

Credit and prerequisites to be determined by the department. First and second semesters. Studies of minor problems in morphology, taxonomy and applied entomology, with particular reference to the preparation of the student for individual research.

(Staff.)

Ent. 202. Research.

First and second semesters. Required of graduate students majoring in Entomology. This course involves research on an approved project. A dissertation suitable for publication must be submitted at the conclusion of the studies as a part of the requirements for an advanced degree.

(Staff.)

Ent. 203. Advanced Insect Morphology (2).

Second semester. One lecture and one three-hour laboratory period a week. Laboratory fee, \$3.00. (Alternates with Ent. 206; not offered in 1957-1958.) Insect structure with special reference to function. Emphasis on internal anatomy. Given in preparation for advanced work in physiology or research in morphology.

(Bickley.)

Ent. 205. Insect Ecology (2).

First semester. One lecture and one two-hour laboratory period a week. Prerequisite, consent of the department. Laboratory fee, \$3.00. A study of fundamental factors involved in the relationship of insects to their environment. Emphasis is placed on the insect as a dynamic organism adjusted to its surroundings.

(Sailer.)

Ent. 206. Bionomics of Mosquitoes (2).

Second semester. One lecture and one three-hour laboratory period a week. Laboratory fee, \$3.00. The classification, distribution, ecology, biology, and control of mosquitoes.

(Bickley.)

FORESTRY

Assistant Professor Enright

For. 30. Elements of Forestry (3).

Second semester. Two lectures and one two-hour laboratory period per week. Prerequisite, Bot. 1. A general survey of the field of forestry, including timber values, conservation, protection, silviculture, utilization, mensuration, engineering, recreation and lumbering. Principles and practices of woodland management. Not opened to juniors or seniors.

HORTICULTURE

Professors Haut, Kramer, Link, Scott, Shanks, Stark, Thompson; Associate Professors Reynolds, Shoemaker; Assistant Professors Britton, Enright, Wiley; Instructor Todd.

Hort. 1. General Horticulture (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A general basic course planned to give the student a background of methods and practices used in production of horticulture crops.

Hort. 5, 6. Fruit Production (3, 2).

First and second semesters. One or two lectures and one laboratory period a week. Courses must be taken in sequence. Prerequisite, Bot. 1. A study of commercial varieties and the harvesting, grading, and storage of fruits. Principles and practices in fruit tree production. One field trip required.

Hort. 11. Greenhouse Management (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A detailed study of greenhouse construction and management.

Hort. 16. Garden Flowers (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. The various species of annuals, herbaceous perennials, bulbs, bedding plants, and roses and their cultural requirements.

Hort. 22. Landscape Gardening (2).

First semester. The theory and general principles of landscape gardening and their application to private and public areas.

Hort. 56. Elements of Landscape Design (2).

Second semester. Two laboratory periods per week. A course dealing with basic design in the use of trees, shrubs, evergreens, annual and perennial flowering plants on home properties.

Hort. 58. Vegetable Production (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of the principles and practices of commercial vegetable production.

Hort. 59. Small Fruits (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of the principles and practices involved in the production of small fruits including grapes, strawberries, raspberries, blackberries, and cranberries.

Hort. 61. Processing Industries (1).

Second semester. Early history and development of the various types of preservation of horticultural crops, such as canning, freezing, dehydration, pickling or brining. The relative importance of these methods on state, national and world-wide bases are emphasized.

Hort. 62. Plant Propagation (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of principles and practices of propagation of horticultural plants.

Hort. 63. Flower Store Management (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, Hort. 11. Laboratory fee, \$5.00. A study of the operation and management of a flower store. Laboratory period devoted to principles and practice of floral arrangements and decoration. (Not offered 1957-1958.)

For Advanced Undergraduates

Hort. 118, 119. Seminar (1, 1).

First and second semesters. Oral presentation of the results of investigational work by reviewing recent scientific literature in the various phases of horticulture. (Staff.)

Hort. 121. Plant Operations (2).

First semester. One lecture and one laboratory period a week. Prerequisites, Agr. Engr. 111, 112, Hort. 155. Course deals with arrangement of machinery and equipment in proper sequence to insure the most economical operation of commercial processing plants, providing for continuous flow through the factory. Field trips to commercial plants included. (Wiley.)

Hort. 152. Landscape Design (3).

First semester. One lecture and two laboratory periods a week. Prerequisites, Hort. 22. Prerequisite or concurrently Hort. 107. A consideration of the principles of landscape design supplemented by direct application in the drafting room. (Shoemaker.)

Hort. 153. Landscape Design (3).

Second semester. Three laboratory periods a week. Prerequisite, Hort. 152. Advanced landscape design. (Shoemaker.)

Hort. 160. Landscape Maintenance (3).

Second semester. Two lectures and one laboratory period a week. Prerequisites or concurrently, Hort. 107, 108. A study of the planting and maintenance of turf, ornamental shrubs and trees. Basic principles of park and estate maintenance included. (Not offered 1957-1958.) (Enright.)

For Advanced Undergraduates and Graduates

Hort. 101, 102. Technology of Fruits (2, 2).

First and second semesters. Prerequisites, Hort. 6; Bot. 101. A critical analysis of research work and application of the principles of plant physiology, chemistry, and botany to practical problems in commercial production. (Not offered 1957-1958.) (Thompson.)

Hort. 103, 104. Technology of Vegetables (2, 2).

First and second semesters. Prerequisites, Hort. 58; Bot. 101. For a description of these courses see the general statement under Hort. 101, 102. (Stark.)

Hort. 105. Technology of Ornamentals (2).

First semester. Prerequisite, Bot. 101. A study of the physiological plant processes as related to the growth, flowering, and storage of floriculture and ornamental plants. (Link.)

Hort. 106. World Fruits and Nuts (2).

Second semester. Prerequisite, Bot. 1. A study of the tropical and subtropical fruits and nuts of economic importance. (Haut.)

Hort. 107, 108. Plant Materials (3, 3).

First and second semesters. Prerequisite, Bot. 11. A field and laboratory study of trees, shrubs, and vines used in ornamental plantings. (Enright.)

Hort. 114. Systematic Pomology (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, Hort. 5, 6. A study of the origin, history, taxonomic relationships, and description of fruits. (Haut.)

Hort. S115. Truck Crop Management (1).

Summer session only. Primarily designed for teachers and vocational agriculture and extension agents. Special emphasis will be placed upon new and improved methods of production of the leading truck crops. Current problems and their solution will receive special attention.

Hort. 116. Systematic Olericulture (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, Hort. 58. A study of the classification and nomenclature of vegetable crops. (Reynolds.)

Hort. 122. Special Problems (2, 2).

First and second semesters. Credit arranged according to work done. For major students in horticulture or botany. (Staff.)

Hort. 123. Grades and Standards for Canned and Frozen Products (2).

Second semester. One lecture and one laboratory period a week. Prerequisite, 124. Factors considered in grading. Actual grading of principal products and critical appraisal for quality improvement.

Hort. 124. Quality Control (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, Hort. 58, 155, 156. This course covers the principles involved in the evaluation of factors of quality in processed foods including appearance, kinesthetic flavor and sanitation factors, and statistical presentation of results. (Kramer.)

Hort. S124. Tree and Small Fruit Management (1).

Summer session only. Primarily designed for vocational agriculture teachers and county agents. Special emphasis will be placed upon new and improved commercial methods of production of the leading tree and small fruit crops. Current problems and their solution will receive special attention.

Hort. S125. Ornamental Horticulture (1).

Summer session only. A course designed for teachers of agriculture, home demonstration agents and county agents. Special emphasis will be given to the development of lawns, flowers and shrubbery to beautify homes.

Hort. 126. Nutritional Analyses of Processed Crops (2).

Second semester. Two laboratory periods a week. Prerequisites, Chem. 33 and 34, Bot. 101, Hort. 123. Laboratory practice in standard methods for determining mineral, vitamin, carbohydrate, protein and other food values of various fruit and vegetable products. (Not offered 1957-1958.)

Hort. 150, 151. Commercial Floriculture (3, 3).

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Hort. 11. Growing and handling bench crops and potted plants, and the marketing of cut flowers. (Link.)

Hort. 155. Commercial Processing I (3).

First semester. Two lectures and one laboratory period a week. Prerequisites, Chem. 32, 34, Hort. 61. Laboratory fee, \$5.00. The fundamentals of canning, freezing, and dehydration of horticultural crops. (Wiley.)

Hort. 156. Commercial Processing II (2).

Second semester. One lecture and one laboratory period a week. Prerequisite, Hort. 155. A continuation of Commercial Processing I. Also includes actual work in laboratory of manufacture of jams, jellies, conserves, preserves, marmalades, and juices. (Wiley.)

Hort. 159. Nursery Management (3).

Second semester. Two lectures and one laboratory period a week. Prerequisites or concurrently, Hort. 62, 107, 108. A study of all phases of commercial nursery management and operations. (Enright.)

For Graduates**Hort. 200—Experimental Procedures in Plant Sciences (3).**

First semester. Prerequisite, permission of instructor. Organization of research projects and presentation of experimental results in the field of biological science. Topics included will be: Sources of research financing, project outline preparation, formal progress reports, public and industrial supported research programs, and technical and popular presentation of research data. (Haut.)

Hort. 201, 202. Experimental Pomology (3, 3).

First and second semesters. Prerequisite, Bot. 101. A systematic review of scientific knowledge and practical observations as applied to commercial practices in pomology. (Thompson.)

Hort. 203, 204. Experimental Olericulture (2, 2).

First and second semesters. Prerequisite, Bot. 101. A systematic review of scientific knowledge and practical observations as applied to commercial practices in olericulture. (Not offered 1957-1958.) (Stark.)

Hort. 205. Experimental Olericulture (2).

First semester. Prerequisite, Bot. 101. A systematic review of scientific knowledge and practical observations as applied to commercial practices in olericulture. (Stark.)

Hort. 206 Experimental Floriculture (3).

First semester. Prerequisite, Bot. 101. A systematic review of scientific knowledge and practical observations as applied to commercial practices in Floriculture. (Link.)

Hort. 207. Methods of Horticultural Research (3).

Second semester. One lecture and one four-hour laboratory period a week. A critical study of research methods which are or may be used in horticulture. (Scott.)

Hort. 208. Advanced Horticultural Research (2-12).

First and second semesters. Credit granted according to work done. (Staff.)

Hort. 209. Advanced Seminar (1, 1).

First and second semesters. Five credit hours for five semesters can be obtained. Oral reports with illustrative material are required on special topics or recent research publications in horticulture. (Haut. and Staff.)

Hort. 210. Experimental Processing (2).

Second semester. Prerequisite, permission of instructor. A systematic review of scientific knowledge and practical observations as applied to commercial practices in processing. (Kramer.)

POULTRY HUSBANDRY

Professors Shaffner, Combs; Associate Professor Quigley, Assistant Professors Helbacka and Wilcox.

P. H. 1. Poultry Production (3).

First semester. Two lectures and one laboratory period a week. This is a general comprehensive course covering all phases of modern poultry husbandry practices, including breeds, incubation, brooding, housing, feeding, culling, marketing, caponizing, and the economics of production and distribution of poultry products.

P. H. 2. Poultry Biology (2).

Second semester. This course is designed to provide basic information as a foundation for other courses. The zoological classification of and structural differences among domestic birds are considered in their relation to food production.

P. H. 59. Advanced Poultry Judging (1).

First semester. Prerequisite, P. H. 1. One lecture or laboratory period per week. The theory and practice judging and culling by physical means is emphasized, including correlation studies of characteristics associated with productivity. Contestant for regional collegiate judging competitions will be selected from this class.

For Advanced Undergraduates

P. H. 100. Poultry Breeding (2).

Second semester, alternate years. (Not offered in 1958-1959.) Prerequisite, P. H. 1 or 2 and Zool. 104. One lecture and one laboratory period per week. Inheritance of factors related to egg and meat production and quality are stressed. Breeding plans are discussed. (Willcox.)

P. H. 101. Poultry Nutrition (3).

First semester, alternate years. (Not offered in 1958-1959.) Two lectures and one laboratory period a week. Nutritive requirements of poultry and the ingredients used to meet these requirements are presented. Studies are made of various nutritional diseases commonly encountered under practical conditions. (Combs.)

P. H. 102. Physiology of Hatchability (3).

Second semester, alternate years. Two lectures and one laboratory period a week. (Not offered in 1958-1959.) The physiology of embryonic development as related to principles of hatchability and problems of incubation encountered in the hatchery industry are discussed. Laboratory exercises stressing fundamentals of hatchability are assigned. (Shaffner.)

P. H. 103. Commercial Poultry Management (2).

Second semester, alternate years. Prerequisite, ten hours of poultry husbandry, including P. H. 1. (Not offered in 1958-1959.) A symposium on finance, investment, plant layout, specialization, purchase of supplies, and management problems in baby chick, egg, broiler, and turkey production; foremanship, advertising, selling, by-products, production and financial records. Field trips required. (Quigley.)

For Advanced Undergraduates and Graduates

P. H. 104. Technology of Market Eggs and Poultry (3).

First semester. Two lectures and one laboratory per week. A study of the technological factors concerned with the processing, storage, and marketing of eggs and poultry, also factors affecting their quality and grading. (Helbacka.)

A. E. 117. Economics of Marketing Eggs and Poultry (3).

Second semester. Three lectures per week. (See Agricultural Economics A. E. 117.)

Poultry Hygiene, see Veterinary Science, V. S. 107.

Avian Anatomy, see Veterinary Science, V. S. 108.

P. H. 107. Poultry Industrial and Economic Problems (2).

First semester. (Not offered in 1958-1959.) Relation of poultry to agriculture as a whole and its economic importance. Consumer prejudices and preferences, production, transportation, storage, and distribution problems are discussed. Trends in the industry, surpluses and their utilization, poultry by-products, and disease problems, are presented. Federal, state, and private agencies servicing the poultry industry and functions performed by each agency are discussed. (Staff.)

P. H. 108. Special Poultry Problems (1-2).

First and second semesters. For senior poultry students. The student will be assigned special problems in the field of poultry for individual study and report. The poultry staff should be consulted before any student registers for this course. (Staff.)

P. H. S111—Poultry Breeding and Feeding (1).

Summer session only. This course is designed primarily for teachers of vocational agriculture and extension service workers. The first half will be devoted to problems concerning breeding and the development of breeding stock. The second half will be devoted to nutrition. (Combs, Wilcox.)

P. H. S112. Poultry Products and Marketing (1).

Summer session only. This course is designed primarily for teachers of vocational agriculture and county agents. It deals with the factors affecting the quality of poultry products and with hatchery management problems, egg and poultry grading, preservation problems and market outlets for Maryland poultry. (Helbacka.)

For Graduates**P. H. 201. Advanced Poultry Genetics (3).**

First semester. Prerequisite, P. H. 100 or equivalent. This course serves as a foundation for research in poultry genetics. Linkage, crossing-over, inheritance of sex, the expression of genes in development, inheritance of resistance to disease, and the influence of the environment on the expression of genetic capacities are considered. (Wilcox.)

P. H. 202. Advanced Poultry Nutrition (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, P. H. 101, Chem. 31, 32, 33 and 34, or equivalent, or permission of instructor. A fundamental study of the dietary role of proteins, minerals, vitamins, antibiotics, and carbohydrates is given as well as a study of the digestion and metabolism of these substances. Deficiency diseases as produced by the use of synthetic diets are considered. (Combs.)

P. H. 203. Physiology of Reproduction of Poultry (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, P. H. 102 or its equivalent. The role of the endocrines in avian reproduction, is considered. Fertility, sexual maturity, broodiness, egg formation, ovulation, and the physiology of oviposition are studied. Comparative mammalian functions are discussed. (Shaffner.)

P. H. 204. Poultry Seminar (1).

First and second semesters. Oral reports of current researches by staff members, graduate students, and guest speakers are presented. (Staff.)

P. H. 205. Poultry Literature: (1-4).

First and second semesters. Readings on individual topics are assigned. Written reports required. Methods of analysis and presentation of scientific material are discussed. (Staff.)

P. H. 206. Poultry Research (1-6).

First and second semesters. Credit in accordance with work done. Practical and fundamental research with poultry may be conducted under the supervision of staff members toward the requirements for the degrees of M.S. and Ph.D. (Staff.)

P. H. 207. Poultry Nutrition Laboratory (2).

First semester, alternate years. One lecture and one laboratory period a week. (Not offered 1957-1958.) To acquaint graduate students with common basic nutrition research techniques useful in conducting experiments with poultry. Actual feeding trials with chicks, as well as bacteriological and chemical assays will be performed. (Combs, Romoser.)

VETERINARY SCIENCE

Professors Brueckner, Poelma, De Volt, Hansen and Reagan;
Associate Professor Sperry.

For Advanced Undergraduates and Graduates

V. S. 101. Comparative Anatomy (3).

First semester. Two lectures and one laboratory period a week. Normal structure of the domesticated animals; normal physiological activities; interrelationship of structure and function. (Sperry.)

V. S. 102. Animal Hygiene (3).

Second semester. Two lectures and one laboratory period a week. Nature of disease; immunity; prevention, and control; common diseases of farm animals. (Sperry.)

V. S. 103. Regional Comparative Anatomy (2).

First semester. One lecture and one laboratory period a week. Structure and function of the feet of domestic species. Common diseases and abnormalities of the feet; their correction and prevention. (Sperry.)

V. S. 104. Advanced Regional Comparative Anatomy (2).

Second semester. One lecture and one laboratory period a week. Prerequisite, V. S. 103. Advanced studies of the anatomy and physiology of the feet of domesticated animals. Advanced and detailed studies of abnormalities and diseases of the feet; their prevention and correction.

V. S. 107. Poultry Hygiene (3).

Second semester. Two lectures and one laboratory a week. Prerequisites, Bact. 1; P. H. 1. Virus, bacterial, and protozoan diseases; parasitic diseases; prevention, control, and eradication. (De Volt.)

V. S. 108. Avian Anatomy and Physiology (3).

First semester. Two lectures and one laboratory a week. Prerequisite, Zool. 1. Gross and microscopic structure, physiological processes; dissection and demonstration. (De Volt.)

For Graduates

V. S. 201. Animal Disease Problems (2-6).

First and second semesters. Credit in accordance with work done. Prerequisite, veterinary degree or consent of staff. Laboratory and field work by assignment. (Poelma, DeVolt, Hansen, Brueckner.)

V. S. 202. Animal Disease Research (2-6).

First and second semesters. Credit in accordance with work done. Prerequisite, veterinary degree or consent of staff. Studies of practical disease phases. (Poelma, DeVolt, Hansen, Brueckner.)

V. S. 203. Electron Microscopy (2).

First semester. One lecture and one laboratory period a week. Theory of the electron microscope, preparation of specimens, manipulations, photography. (Reagan and Brueckner.)

AGRICULTURAL, EXTENSION, RESEARCH AND REGULATORY AGENCIES

EXTENSION SERVICE

PAUL E. NYSTROM, Director

Cooperative Extension work in agriculture and home economics, established by State and Federal Laws in 1914, is designed to assist the people of the State with their agricultural and homemaking problems. It is conducted under a Memorandum of Understanding between the Extension Service of the University of Maryland and the U. S. Department of Agriculture. The Extension Service becomes the educational arm in the State of the U. S. Department of Agriculture.

The work of the Extension Service is cooperatively financed by the Federal, State and county governments. In each county there is a County Agricultural Agent and Home Demonstration Agent and assistants where funds permit and the work requires. Backed by a staff of specialists at the University, these Agents are in close contact with local people and their problems.

Practically every phase of agriculture and home life comes within the scope of Extension work. The Extension Service teaches largely by demonstrations and carries the scientific and economic results of the Experiment Station and Department of Agriculture to rural people in ways that they understand and use.

In Maryland, the Extension Service works in close association with all rural groups and organizations. In addition to work on the farms and in the farm homes, the Extension program is aimed at the many rural and even urban people who service the agricultural industries of the State including consumers. Thousands of boys and girls are developed as leaders and given practical education in 4-H Clubs.

In addition to work with adults, thousands of boys and girls are developed as leaders and given practical education in 4-H Clubs. Through their diversified activities, the boys and girls are given a valuable type of instruction and training, and are afforded an opportunity to develop self-confidence, perseverance and citizenship.

The Extension Service in cooperation with the College of Agriculture and the Experiment Station arranges and conducts short courses in various lines, many of which are held at the University. Some of these courses have been held regularly over a period of years and others are added as the need and demand develop.

Canners' Short Course

For many years a short course has been held each year to aid canners in keeping abreast of the latest developments in their industry. It is usually held in February.

Rural Women's Short Course

To provide special training for rural women, the Rural Women's Short Course has been conducted since 1922. Attendance, extending for one week, has grown steadily to more than one thousand women from all counties and includes urban women from Baltimore City.

Other Short Courses

Courses for nurserymen, florists, poultry flock selection agents, poultry products marketing, beekeepers, greenkeepers, sanitarians, conservation, and cow testers are among those held in recent years. Announcement of such courses is made to those who may be interested.

Boys' and Girls' Club Week

Members and leaders of boys' and girls' 4-H Clubs come to the University for a week each year, usually in August. Class work and demonstrations are given by specialists and a broad program of education, inspiration and recreation is provided.

THE AGRICULTURAL EXPERIMENT STATION

IRVIN C. HAUT, Ph.D., *Director*

The Agricultural Experiment Station serves Maryland agriculture in much the same manner as research laboratories serve large corporations. Maryland agriculture is made up of forty thousand small individual businesses, and there is not sufficient capital, or sufficient income so that each one of these can conduct research. Yet the problems which face a biological undertaking such as farming, are as numerous and perplexing as the problems of any business. Certainly our production of food would be much more costly if it were not for the research results that have been obtained by the Agricultural Experiment Station.

The station is a joint Federal and State undertaking. Passage of the Hatch Act in 1887, which made available a grant in aid to each state for the purpose of establishing an agricultural experiment station, gave a great impetus to the development of research work in agriculture. This work was further encouraged by the passage of the Adams Act in 1906, the Purnell Act in 1925, the Bankhead-Jones Act in 1935, and the Flannagan-Hope Act of 1946.

The work of the Maryland Agricultural Experiment Station which is supported by these Acts and by State appropriations centers at College Park. On the University Campus are to be found laboratories for studying insects and diseases, soil fertility problems, botanical problems, and others. This is also the location of the livestock and dairy barns with their experimental herds. About eight miles from the campus at College Park, near Beltsville, the Plant Research Farm of about 500 acres is devoted to work connected

with soil fertility, plant breeding and general horticultural problems. An experimental farm near Upper Marlboro is devoted to the problems of tobacco growing and curing. A farm near Salisbury is devoted to solution of the problems of producers of broilers and of vegetable crops in the southern Eastern Shore area. Near Ellicott City a farm of 234 acres is devoted to livestock problems. Also tests of various crop and soil responses are distributed throughout the State. These different locations give a chance to conduct experiments under conditions which exist where the results will be put into practice.

The Station, in general, exists as the "trouble-shooter" for Maryland farmers. The solution of many difficult problems in the past has given the Station an excellent standing with farmers of the State.

DEPARTMENT OF MARKETS

All of the activities of the Department of Markets are geared to the importance in modern agriculture of the problems of marketing farm products. The Department endeavors to serve the every-day needs of the farmer in marketing his products and to insure a fair and equitable treatment of the farmer in all dealings which he may have concerning the marketing of his products. In the performance of these responsibilities, the Department carries out programs in extension marketing, conducts market surveys, compiles and disseminates marketing information and market data, operates a market news service, provides an agricultural inspection and grading service, maintains a consumer information service and enforces and interprets the agricultural marketing laws of the state. The regulatory aspects of the Department's functions are carried out as the agent of the State Board of Agriculture under the authority of various State laws relating to the marketing of farm products. A close working relationship is maintained with other specialists in the Extension Service, all departments of the Agricultural Experiment Station, the Maryland Crop Reporting Service, and the Agricultural Marketing Service of the U. S. Department of Agriculture. The voluntary and dynamic cooperation of the personnel in these various activities brings to bear on agricultural marketing problems an effective combination of research, education, and service.

The passage of the Federal Agricultural Research and Marketing Act gave additional impetus to the study and solution of agriculture's marketing problems. The Department of Markets is largely responsible for developing the State program under Title II of this act.

Information and assistance in all phases of marketing is available to all interested persons. When a sufficient number of individuals are interested, marketing specialists hold meetings and demonstrations in local communities. Field offices are located in Baltimore, Salisbury, Hancock, Hagerstown and Pocomoke. Department headquarters is at the University of Maryland, College Park, Maryland.

STATE HORTICULTURAL DEPARTMENT

In 1896 the subject of nursery inspection was given consideration under Article 48, of the Code of Public General Laws, under the title "Inspection" as designated by Chapter 290 of the "Acts of the General Assembly of Maryland of 1896." In 1898 certain sections of Article 48 were repealed and reenacted with amendments, under a new sub-title, "State Horticultural Department," and eight new sections were added thereto. In 1916 the sections were again re-enacted with such changes in the wording as were necessary to bring them into conformity with the reorganization of the Maryland State College of Agriculture and Experiment Station and its Board of Trustees. Subsequently all regulatory functions including newly enacted Articles in regard to bee diseases, mosquitoes, and aerial spraying, were transferred to the State Board of Agriculture under Chapter 391 of the "Acts of the General Assembly."

Working in this field is designed to control insects and plant diseases and to protect the public in the purchase of products of nurserymen and florists. A considerable part of the time of the staff is occupied by inspection of orchards, crops, nurseries, greenhouses, and floral establishments. Cooperation with the Federal Government in the inspection and certification of materials that come under quarantine regulations is another major function of the department. The department enforces the provisions of the Apiary Law, including inspection of apiaries. This service includes control and eradication of diseases of strawberries and other small fruits, diseases of apples, peaches, etc., inspection and certification of potatoes and sweet potatoes for seed, control of white pine blister rust, Dutch elm disease, etc.

DAIRY INSPECTION SERVICE

The Maryland Dairy Inspection Law became effective June 1, 1935. However, the present activities of the Dairy Inspection Service are based on Article 43 of the Annotated Code of Maryland, Section 542 thru Section 558, of the Laws of Maryland, 1951. The dairy department is charged with the administration of the law.

The purposes of the Dairy Inspection Law are as follows: (a) To insure producers who sell milk and cream by measure, weight and butterfat test, that samples, weights and tests used as the basis of payment for such products are correct; (b) To insure dealers who purchase milk and cream that their agents shall correctly weigh, sample, and test these products; (c) To insure correctness of tests made for official inspections or for public record. To achieve these purposes the law requires the licensing of all dealers who purchase milk and cream from producers, whether the purchases are by measure, weight, or test, and the licensing of all persons sampling, weighing and testing milk and cream when the results of such samples, weights, and tests are to serve as a basis of payment to producers.

Duties of the Dairy Inspection Service, resulting from enforcement of the Inspection Law, deal with the calibration of that glassware used in testing milk and cream and the rejection of inaccurate items; examination of all weighers, samplers, and testers and the issuance of licenses to those satisfactorily passing the examination; and inspection of the pertinent activities of weighers, samplers, testers and dairy plants.

STATE DEPARTMENT OF DRAINAGE

The State Department of Drainage was established in 1937. Its duties are to promote and encourage the drainage of agricultural lands in the State, to correlate the activities of the local drainage organizations in the State and to cooperate with State and Federal agencies in the interest of a permanent program of improved drainage.

STATE INSPECTION AND REGULATORY SERVICE

Feeds, Fertilizers, Agricultural Liming Materials, Insecticides and Fungicides

The protection of consumers and ethical manufacturers of agricultural products against fraudulent practices, makes certain specialized statutes necessary. These laws are classified as correct labeling acts, and are enforced by the State Inspection and Regulatory Service. Included in this legislation are the State Feed, Fertilizer, Agricultural Liming Materials, and Insecticide and Fungicide laws.

Work of enforcing these laws is divided into five distinct phases: First, the commodities concerned must be registered under acceptable brand names, and with proper labels; second, official samples must be collected by the Department's inspectors from all parts of the state; third, chemical and physical examinations must be made to establish that professed standards of quality are being met; fourth, results must be assembled and published in concise and understandable form, with the reports made available to all interested persons; and fifth, the prosecution of those responsible for flagrant violations.

Hundreds of tests also are made annually on feed, fertilizer, and lime samples submitted by state purchasers. No charge is made for this service.

Throughout its existence, this Department has cooperated with comparable federal agencies in every possible way. In this activity it has attained not only state-wide, but also a nationally-recognized reputation for accuracy, timeliness, and unbiased fair treatment of the consumer and manufacturer alike.

The facilities of the Department are at all times available to supply the manufacturer with technical advice and to safeguard him from unfair competition.

For its entire program of service and protection, the Department relies in large measure upon education, from the standpoint of both buyer and

seller. However in those rare instances when this policy is unheeded, backing by the courts, both federal and state, can be depended upon for enforcement assistance.

SEED INSPECTION SERVICE

The Seed Inspection Service administers the State seed law; inspects seeds sold throughout the State; collects seed samples for laboratory examination; reports the results of the examinations to the parties concerned; publishes summaries of these reports which show the relative reliability of the label information supplied by wholesale seedsmen; cleans and treats tobacco seed intended for planting in the State; makes analysis, tests, and examinations of seed samples submitted to the Laboratory; and advises seed users regarding the economic and intelligent use of seeds. The Service also cooperates with the Agricultural Marketing Service of the United States Department of Agriculture in the enforcement of the Federal Seed Act in Maryland.

The work of the Seed Inspection Service is not restricted to the enforcement of the seed law however, for State citizens may submit seed samples to the Laboratory for analysis, test, or examination. Specific information regarding suitability for planting purposes of lots of seeds is thus made available to individuals without charge. The growth of this service has been steady since the establishment of the Laboratory in 1912. Most Maryland citizens, city and country, are directly interested in seeds for planting in flower-beds, lawns, gardens, or fields.

MARYLAND LIVE STOCK SANITARY SERVICE

The Live Stock Sanitary Service is organized under the State Board of Agriculture and is charged with the responsibility of preventing the introduction of diseases of animals and poultry from outside of the state and with control and eradication of such diseases within the state. The service is further charged with the responsibility of cooperating with the State Department of Health in the suppression of diseases of animals and poultry which affect the public health.

Control projects in bovine tuberculosis, Johne's disease, and bovine brucellosis are conducted in cooperation with the Agricultural Research Service of the United States Department of Agriculture. The field force of state employed veterinarians is augmented by a number of federal veterinarians in the conduct of these control programs. The control of swine brucellosis, pullorum disease in poultry, rabies, and many other disease conditions is conducted by the state without outside assistance.

Facilities for the diagnosis of a wide variety of diseases are furnished in the main laboratory at College Park and in the branch laboratories at Salisbury, Centreville, Bel Air, Frederick, Hagerstown, and Oakland.

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3. College of Arts and Sciences
4. College of Business and Public Administration
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11. Summer School
12. Graduate School

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13. School of Dentistry
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17. School of Nursing

At Heidelberg

The catalog of the European Program may be obtained by addressing the Dean, College of Special and Continuation Studies, College Park, Maryland.

1957-1958



UNIVERSITY OF MARYLAND

THE COLLEGE OF

**arts and
sciences**

AT COLLEGE PARK



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Index on inside back cover.

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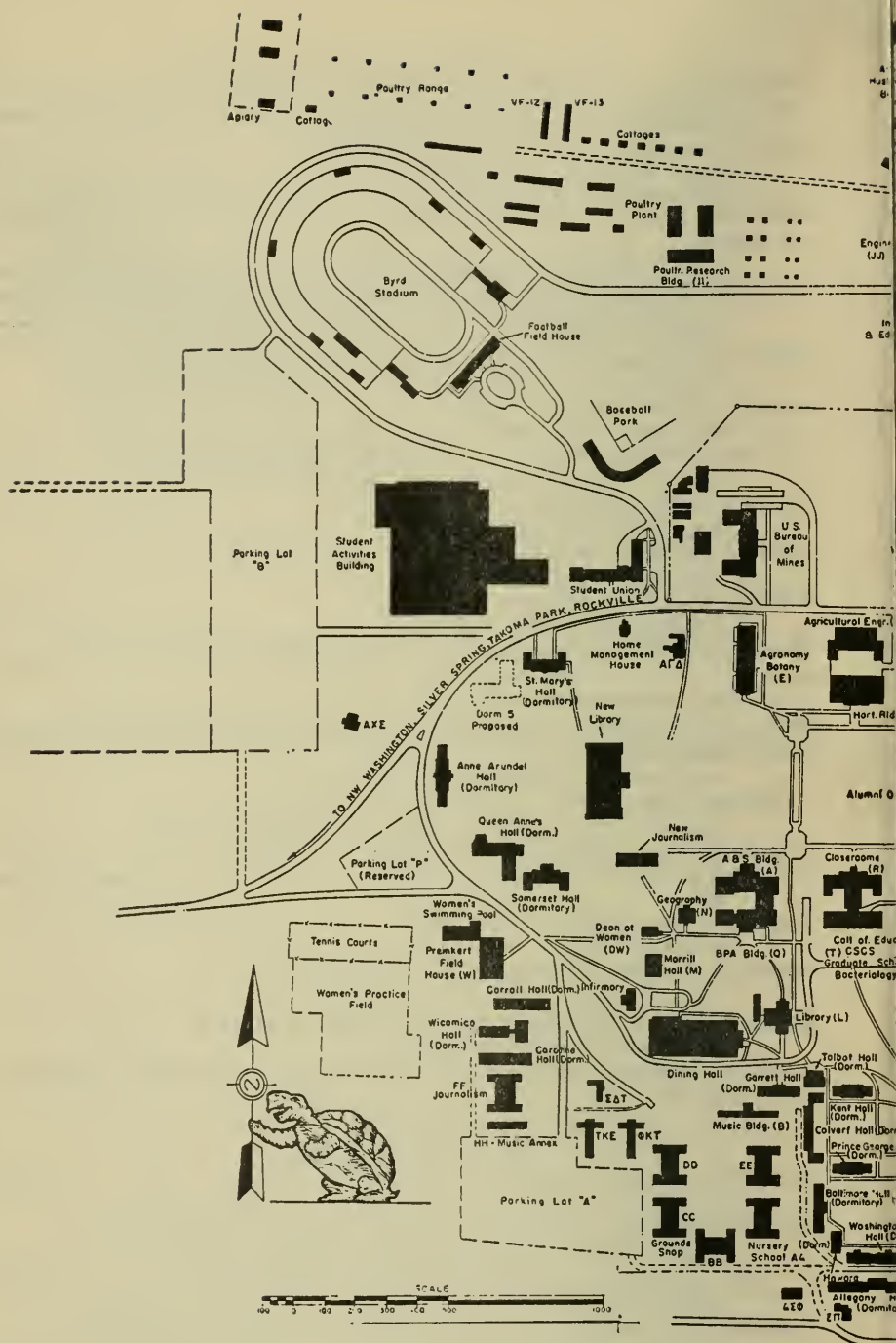
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UNIVERSITY OF MARYLAND



COLLEGE PARK CAMPUS

1957



BUILDING CODE LETTERS FOR CLASS SCHEDULES

A	Arts & Sciences - Francis Scott Key Hall
AA	Nursery School
AR	Armory
B	Music
IB	Administration
C	Chemistry
Col	Coliseum
DD	Dairy - Turner Laboratory
DO	Aviation Psychology Laboratory
DW	Dean of Women
E	Agronomy - Botany - H. J. Patterson Hall
EC	Counseling Center
F	Horticulture - Holzappel Hall
FF	Journalism
G	Richie Gymnasium
GG	Activities Building
H	Home Economics - Margaret Brent Hall
I	Agricultural Engr. - Shriver Laboratory
J	Engr. Classroom Bldg.
K	Zoology - Silvester Hall
L	Library - Shoemaker Building
M	Morrill Hall
N	Geography
O	Agriculture - Symons Hall
P	Industrial Arts & Education - J. M. Patterson Bldg.
Q	Business & Public Administration - Taliaferro Hall
R	Classroom Building - Woods Hall
S	Engr. Laboratories
T	Education - Skinner Building
U	Chem. Engr.
V	Wind Tunnel
W	Preinkert Field House
X	Judging Pavilion
Y	Mathematics
Z	Physics
JJ	Poultry - Jull Hall
JJ	Engine Research Lab. (Molecular Physics)

Sororities Not Shown

Phi Sigma Sigma
Alpha Chi Omega
Alpha Xi Delta

Fraternalities Not Shown

Alpha Epsilon Pi
Zeta Beta Tau
Phi Kappa Gamma
Tau Epsilon Phi

Civil Defense Training Bldg.

1957-58 CALENDAR

First Semester

1957

September 17-20	Tuesday-Friday	Registration, first semester
September 23	Monday	Instruction begins
November 27	Wednesday after last class	Thanksgiving recess begins
December 2	Monday, 8 A.M.	Thanksgiving recess ends
December 21	Saturday after last class	Christmas recess begins

1958

January 6	Monday, 8 A.M.	Christmas recess ends
January 20	Monday	Charter Day
January 21	Tuesday	Pre-Examination Study Day
January 22-29	Wednesday-Wednesday, inc.	First Semester examinations

Second Semester

February 4-7	Tuesday-Friday	Registration, second semester
February 10	Monday	Instruction begins
February 22	Saturday	Washington's birthday, holiday
March 25	Tuesday	Maryland Day
April 3	Thursday after last class	Easter recess begins
April 8	Tuesday, 8 A.M.	Easter recess ends
May 15	Thursday	Military Day
May 28	Wednesday	Pre-Examination Study Day
May 29-June 6	Thursday-Friday, inc.	Second Semester examinations
May 30	Friday	Memorial Day, holiday
June 1	Sunday	Baccalaureate exercises
June 7	Saturday	Commencement exercises

Summer Session, 1958

June 23	Monday	Registration, Summer Session
June 24	Tuesday	Summer Session begins
August 1	Friday	Summer Session ends

Short Courses

June 16-21	Monday-Saturday	Rural Women's Short Course
August 4-9	Monday-Saturday	4-H Club Week
September 2-5	Tuesday-Friday	Firemen's Short Course



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B.S., University of Maryland, 1955.
- ARNOLD D. PICKAR**, Physics.
B.S., U.S. Merchant Marine Academy, 1948; B.A., Cornell University, 1951.
- JOE L. POYER**, Chemistry.
B.S., University of Oklahoma, 1954.
- STEPHEN T. QUIGLEY**, Chemistry.
B.S., St. Thomas College, 1942; M.S., University of Detroit, 1950.
- EDWARD P. RAGELIS**, Chemistry.
B.S., St. John's College, 1954.
- SHIRLEY M. READ**, Chemistry.
B.S., University of Maryland, 1956.
- JOHN V. RECESSO**, Physics.
B.S., Georgetown University, 1955.
- SYLVESTER REESE**, Mathematics.
B.S., Morgan State College, 1955.
- JOHN R. ROARK**, Psychology.
B.A., Lafayette College, 1952.
- MICHAEL ROCK**, Chemistry.
B.A., Yeshiva College, 1952.
- GERALD V. ROLPH, JR.**, Foreign Languages.
B.A., Northwestern University, 1952; M.A., University of Maryland, 1955.

EDWARD C. ROSENZENWEIG, Microbiology.

B.A., Centre College, 1951; M.S., University of Maryland, 1956.

MAY ROSWELL, Foreign Languages.

B.A., University of Dublin, 1936; Certificate of Teaching, University of Cambridge, 1937.

MARVIN L. ROUSH, Physics.

B.S., Ottawa University, Kansas, 1956.

HOWARD E. RUSKIE, Chemistry.

B.S., Fordham University, 1956.

ROBERT L. SANDRIDGE, Chemistry.

B.S., West Liberty State College, 1954.

HARRY A. SCHAFFT, Physics.

B.A., The New York University, 1954.

MARIJKE SCHEPMAN, Chemistry.

B.S., Agnes Scott, 1956.

DAVID R. SCHRYER, Chemistry.

B.S., Catawba College, 1956.

FRANK SCOTTI, Chemistry.

B.S., City College of New York, 1953.

LLOYD W. SHEARER, Zoology.

B.S., University of Maryland, 1953.

SIDNEY F. SIGWALD, Zoology.

B.S., University of Maryland, 1952.

JAMES C. SIMMS, Sociology.

B.A., University of Maryland, 1956.

DANIEL E. SONENSHINE, Zoology.

B.S., City College of New York, 1954.

EDWARD STONE, Chemistry.

B.S., Bradford-Durfee, 1955.

JAMES E. SWENARTON, Chemistry.

B.S., University of Virginia, 1953.

DAVID F. TEMPLETON, JR., Mathematics.

B.A., American University, 1956.

CARTER O. TIMMONS, Chemistry.

B.S., Oberlin College, 1956.

LOUIS TRAPASSO, Chemistry.

B.S., City College of New York, 1954.

GORDON T. TROTTER, Mathematics.

B.S., University of Maryland, 1956.

ROGER H. TRUMBORE, Zoology.

B.S., University of Wisconsin, 1955.

JOHN VAN DE CASTLE, Chemistry.

B.S., St. John's College, 1955.

HOWARD T. VOORMAN, Zoology.

B.S., Lebanon Valley College, 1956.

HUGH E. VROMAN, Zoology.

B.S., University of Maryland, 1950.

WILLIAM D. WALLACE, Physics.

B.A., Michigan State Normal College, 1955.

WILBUR H. WANDELL, JR., Physics.

B.A., Colorado College, 1956.

ERWIN WERNER, Chemistry.

B.S., Haverford College, 1954.

C. EVANS WHITE, Chemistry.

B.S., Queens College, 1952.

LOUIS A. WILSON, Zoology.

B.A., Pennsylvania State University, 1953.

HANS J. WINKLER, Chemistry.

B.S., University of Maryland, 1956.

MARTIN F. WISKOFF, Psychology.

B.A., City College of New York, 1956.

JOANNA M. WOOD, Mathematics.

B.A., Temple University, 1949.

JOHN H. WORKMAN, Chemistry.

B.S., University of West Virginia, 1954.

HAROLD J. ZABSKY, Chemistry.

Assoc. in Science, Joplin Jr. College, 1951; B.S., University of California, 1953.

ASSISTANTS

GEORGE W. EASTMENT, Microbiology.

LATIF A. FAKHOURY, Physics.

JEANNE FALLIEROS, Physics.

RUTH FEAIRHELLER, Chemistry.

GILDANNA LIMA, Chemistry.

COLLEGE OF ARTS AND SCIENCES

LEON PERDUE SMITH, Ph.D., *Dean*CHARLES MANNING, Ph.D., *Assistant Dean*

THE College of Arts and Sciences offers its students a liberal education. It seeks to develop graduates who can deal intelligently with the problems which confront them and whose general education will be a continuing source not only of material profit, but of genuine personal satisfaction. It also offers each student the opportunity to concentrate in the field of his choice; this element of depth serves both as an integral part of his education and as a foundation for further professional training or pursuits.

Students in other colleges of the University are offered training in fundamental courses that serve as a background for their professional education.

The courses required by the University for the baccalaureate degree in any college emphasize the development and nature of American civilization. All of these courses except one are given by the College of Arts and Sciences.

History

This college is an outgrowth of the Division of Language and Literature and the Division of Applied Science and the later School of Liberal Arts of Maryland State College. In 1921 the School of Liberal Arts and the School of Chemistry were combined and other physical and biological sciences were brought into the newly formed College of Arts and Sciences. In later reorganizations some departments have been added and some transferred to the administrative control of other colleges.

Requirements for Admission

The requirements for admission to the College of Arts and Sciences are, in general, the same as those for admission to the other colleges and schools of the University. Application must be made to the Director of Admissions, University of Maryland, College Park, Maryland.

The student who intends to pursue a program of study in the College of Arts and Sciences should include the following subjects in his high school program; English 4 units; Algebra, 2 units; Plane Geometry, 1 unit; Foreign Language, 2 or more units; Biological or Physical Sciences, 1 or more units; History and Social Sciences, 1 or more units.

The student who wishes to major in Chemistry, Mathematics, Physics, Bacteriology, Botany, Zoology or who wishes to follow a pre-medical or pre-dental program should include trigonometry and Solid Geometry, and, if possible, Chemistry and Physics in his high school program.

A complete statement of admission requirements and policies will be found in the General Information Catalog. A copy may be obtained by writing to the Director of Publications, University of Maryland, College Park, Maryland.

Costs

Actual annual costs of attending the University include: \$165.00 fixed charges; \$77.00 special fees; \$400.00 board; \$140.00 to \$170.00 lodging for Maryland residents, or \$180.00 to \$220.00 for residents of other States and Countries; and laboratory fees; which vary with the laboratory courses pursued. A matriculation fee of \$10.00 is charged all new registrants. A charge of \$250.00 is assessed students who are non-residents of the State of Maryland.

For a more detailed statement of these costs write to the Director of Publications, University of Maryland, College Park, Maryland, for a copy of the "General Information Issue" of the Catalog.

Degrees

The degrees conferred on students who have met the requirements prescribed by the College of Arts and Sciences are Bachelor of Arts and Bachelor of Science.

Students of this College who complete satisfactorily curricula with majors in departments of the Humanities or Social Sciences are awarded the degree of Bachelor of Arts*. Those who complete satisfactorily curricula with majors in departments of Biological or Physical Sciences are awarded the degree of Bachelor of Science.† Those who complete satisfactorily the special professional program in the Department of Music are awarded the degree of Bachelor of Music.

Students who complete satisfactorily the prescribed combined program of Arts and Sciences and Medicine, or of Arts and Sciences and Dentistry, will be granted the degree of Bachelor of Science. Students who complete satisfactorily the prescribed combined program of Arts and Sciences and Law will be granted the degree of Bachelor of Arts.

Residence

The last thirty semester hours credit of any curriculum leading to a baccalaureate degree in the College of Arts and Sciences must be taken in residence in this University.

Students working for one of the combined degrees must earn the last 30 semester hours credit of the arts program in residence in the College of Arts and Sciences, College Park.

The complete statement of this requirement may be found in section 28 of the *Academic Regulations*.

*The departments of Economics, Geography, and Government and Politics, although administratively in the College of Business and Public Administration, offer courses for Arts and Sciences students. Majors may be elected in these departments as in those of the other departments of the Division of Social Sciences which are administered by the College of Arts and Sciences.

†The department of Botany, although administered by the College of Agriculture, offers courses for Arts and Sciences students. A Major may be elected in this department as in those of the other departments of the Division of Biological Sciences administered by the College of Arts and Sciences.

General Requirements for Degrees

The baccalaureate degree from the College of Arts and Sciences may be conferred upon a student who has satisfied the following requirements:

1. University requirements.
2. College of Arts and Sciences requirements:

A minimum of 120 semester hours credit in academic subjects other than basic military science is required for a bachelor's degree. Men must acquire in addition 12 semester hours in military science, and 4 semester hours in physical activities. Women must acquire in addition 4 semester hours in hygiene and 4 semester hours in physical activities.

Work in the Freshman and Sophomore Years

The work of the first two years in the College of Arts and Sciences is designed to give the student a basic general education, and to prepare him for concentration in the latter part of his course.

It is the student's responsibility to develop in these earlier years such proficiency in basic subjects as may be necessary for his continuation in the field of his special interest. Personal aptitude and a general scholastic ability must also be demonstrated, if permission to pursue a major study is to be obtained.

The student should follow the curriculum for which he is believed to be best fitted. It will be noted that a common group of studies is required of all students who are candidates for a bachelor's degree. These subjects should be taken, if possible, during the Freshman and Sophomore years.

University Requirements: The Program in American Civilization

The University considers that it is important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American Civilization. This program is also designed to provide the student with a general educational background.

Work in American Civilization is offered at three distinct academic levels. The first level is required of all freshmen and sophomores at the University and is described below. The second level is for undergraduate students wishing to carry a major in this field. The third level is for students desiring to do graduate work in this field (see catalog for the Graduate School).

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the Program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

The 24 semester hours in American Civilization are as follows:

1. English (12 hours, Eng. 1, 2 and 3, 4 or 5, 6), American History (6 hours Hist. 5, 6), and American Government (3 hours, G. & P. 1) are required subjects; however, students who qualify in one, two, or all three of these areas by means of University administered tests are expected to substitute certain elective courses. Through such testing a student may be released from 3 hours of English (9 hours would remain an absolute requirement), 3 hours of American History (3 hours remaining as an absolute requirement), and 3 hours of American Government. Students released from 3 hours of English will ordinarily take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in History will ordinarily take Hist. 56 instead of Hist. 5 and 6.

2. For the 3 additional hours of the 24 hours required the student elects one course from the following group (Elective Group I):

Economics 37, Fundamentals of Economics (Not open to Freshmen; students who may wish to take additional courses in economics should substitute Economics 31 for Economics 37).

Philosophy 1, Philosophy of Modern Man

Sociology 1, Sociology of American Life

3. Students who, on the basis of tests, have been released from 3, 6 or 9 hours in otherwise required courses in English, American History or American Government (see 1 above), shall select the replacements for these courses from any or all of the following groups: (a) more advanced courses in the same department as the required courses in which the student is excused, or (b) Elective Group I (see 2 above) provided that the same course may not be used as both a Group I and a Group II choice, or (c) Elective Group II. Group II consists of the following 3-hour courses:

History 2, History of Modern Europe; either History 51 or 52, The Humanities; either Music 20, Survey of Music Literature or Art 22, History of American Art; Psychology 1, Introduction to Psychology; and Sociology 5, Anthropology.

University Requirements: ROTC, Physical Education and Health.

1. Basic Military Science for Men—Twelve semester hours. Required freshman and sophomore years.

2. Health for Women—four semester hours. Required freshman year.

3. Physical Activities for Men and Women—four semester hours. Required freshman and sophomore years.

All male students, unless specifically exempted under University regulations, are required to take basic Air Force R. O. T. C. training for a period of two years. The successful completion of this course is a prerequisite for graduation and it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who have not fulfilled this requirement will complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may, with proper approval, carry as electives during their Junior and Senior years advanced Air Force R. O. T. C. courses which lead to a regular or reserve commission in the United States Air Force.

For further details concerning the requirements in Military Instruction write to the Director of Publications, University of Maryland, College Park, Maryland, for a copy of the "General Information Issue" of the Catalog.

College Requirements

1. Foreign Language—twelve semester hours in one language, unless otherwise specified.

2. Natural Science and Mathematics—twelve semester hours, unless otherwise specified. The science courses elected require the approval of the dean; they will usually be from those departments offering majors in the College of Arts and Sciences. At least one course must include laboratory experience and one course must be elected in each of the divisions of Biological and Physical Sciences except in the case of students whose science courses are specifically prescribed in their curricula.

3. Speech—two to four semester hours in accordance with the particular curriculum.

4. Major and Minor Requirements—When a student has completed satisfactorily the requirements of the freshman and sophomore years he will select a major in one of the departments of an upper division and for graduation will complete a departmental major and a minor. The courses constituting the major and the minor must conform to the requirements of the department in which the major work is done.

The student must have an average of not less than C in the introductory courses in the field in which he intends to major.

A major shall consist, in addition to the underclass departmental requirements, of 24-40 hours, of which at least twelve must be in courses numbered 100 or above.

A minor in programs leading to the A. B. degree, shall consist of a coherent group of courses totalling 18 semester hours in addition to the requirements listed above. At least six of the 18 hours must be in a single department in courses numbered 100 or above. The courses comprising the minor must be chosen with the approval of the major department.

No minor is required in programs leading to the B. S. degree, but the student must take such supporting courses in science or other fields as are required by his major department.

The average grade of the work taken in the major field must be at least C; some departments will count toward satisfaction of the major requirement no course completed with a grade of less than C. The average grade of the work taken in the major and minor fields combined must be at least C. A

general average of C in courses taken at the University of Maryland is required for graduation.

Junior Requirements

A student must acquire a minimum of 56 academic semester hours with an average grade of at least C in the Freshman and Sophomore years before he will be permitted to begin advanced work on his major and minor.

Normal Load

The normal load for students in this college is 15 semester hours credit per semester, exclusive of the required work in physical activities, military science, and hygiene.

Juniors and seniors are not permitted to register for more than 18 hours without the approval of the Dean of the College.

Advisers

Each freshman and sophomore in this college will be assigned to a faculty adviser who will help the student, during his first two years, to select his courses and to determine what his field of major concentration should be. Juniors in the combined programs will continue in the same system.

Other juniors and seniors will consider the head of their major department, or his designated assistant, their adviser, and should consult him about the arrangements of their schedules of courses.

Electives in Other Colleges and Schools

A limited number of courses taken in other colleges and schools of the University may be counted for elective or minor credit toward a degree in the College of Arts and Sciences.

The number of credits which may be accepted from the various colleges and schools is as follows: College of Education—24; all other colleges—20. The combined credits from these colleges and schools shall not exceed 20 (or 24 if courses in Education are included). Schools of Dentistry, Law, and Medicine—In combined degree programs the first year of professional work must be completed.

Certification of High School Teachers

If courses are properly chosen in the field of education, a prospective high school teacher can prepare for high school positions, with a major and minor in one of the departments of this College. A student who wishes to work for a teacher's certificate should consult his adviser before the junior year.

Special Honors

Programs of readings for special honors are open to undergraduates. These programs are currently available in Literature, English, French, German, History, Mathematics, and Spanish. The program for special honors in literature is open to undergraduates in any college of the University who have the approval of their dean and of the head of the department of English. Candi-

dates are examined on an approved list of literary works including translations from foreign languages. Application may be made to the head of the department of English at any time before the beginning of the junior year. The programs for special honors in English, French, German, History, Mathematics, and Spanish are open to students majoring in the departments concerned. The individual programs of readings should be begun early in the student's collegiate career; in no case later than the beginning of the senior year. Application should be made to the head of the department concerned.

GENERAL A.B. CURRICULUM

The following curriculum gives the subjects required of students planning to major in one of the departments of the Divisions of Humanities or Social Studies. Since some departmental majors require prerequisites which should be taken during the first two years, individual programs must be prepared in consultation with the assigned adviser; the elective hours listed may be used for this purpose. Lower division advisers and the heads of the departments of Music and Sociology have available copies of normal curricula for distribution to students who wish additional information about majors in Art, Music or Sociology.

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government (or Sociology of American Life)	3	....
*Soc. 1—Sociology of American Life (or American Government)	....	3
**Foreign Language	3	3
Mathematics or Natural Science.....	3-4	3-4
L. S. 1, 2—Library Science.....	1	1
Speech 1, 2—Public Speaking.....	2	2
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
He. 2, 4—Health (Women).....	2	2
Physical Activities	1	1
Total	18-20	18-20
<i>Sophomore Year</i>		
Eng. 3, 4 or 5, 6—Composition and English or World Literature	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Foreign Language (Continued).....	3	3
Natural Science or Mathematics.....	3-4	3-0
Elective	3	3-6
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	16-20	16-19

*See "The Program in American Civilization" on pages 34-35.

**A placement test is given during Registration Week for students wishing to pursue a language they have studied in high school.

I. AMERICAN CIVILIZATION

The University has a comprehensive program in American studies. It begins with required courses on the freshman and sophomore level, includes a

major for juniors and seniors, and also provides for graduate work on the M.A. and Ph.D. level. (For information concerning the graduate program, see the Graduate School catalog.)

The student who majors in American Civilization has the advantage of being taught by cooperating specialists from various departments. The committee in charge of the program represents the departments of English, History, Government and Politics, and Sociology. Members of the committee serve as official advisers to students electing to work in the field.

The program is intended to have generous breadth, but the danger of securing breadth without depth is offset by the requirement of an area of concentration. Studies in American Civilization are supplemented by studies in source cultures and interacting cultures; however, in planning a curriculum, students are required to concentrate in one of the four departments primarily concerned with the program. The program must include at least 42 semester hours of work from the departments participating in the program. These credits constitute collectively a major and a minor. At least 20 of these 42 hours of advanced work must be in 100-level courses. All the advanced work should be so distributed that the student will take at least 9 hours in each of three out of the four cooperating departments, including of course the department of his concentration.

In his senior year, each major student is required to take a conference course (American Civilization 137, 138) in which the study of American Civilization is brought to a focus. During this course, the student analyzes eight or ten important books which reveal fundamental patterns in American life and thought and receives incidental training in bibliographical matters, in formulating problems for special investigation, and in group discussion.

Freshmen and sophomores who are interested in concentrating in American Civilization should consult with their Lower Division Adviser. Upperclassmen should consult with the Executive Secretary of the American Civilization curriculum, Professor Bode.

Suggested sample curriculum for American civilization majors:

Junior year: Hist. 52, The Humanities (3); Hist. 105 and 106, Social & Economic History of the United States (3, 3); Eng. 150 and 151, American Literature (3, 3); Government and Politics 144, American Political Theory (3); Phil. 121, American Philosophy (3); Electives (9).

Senior year: American Civilization 137 and 138, Conference course in American Civilization (3, 3); Government and Politics 174, Political Parties (3); Phil. 154, Political and Social Philosophy (3); Soc. 105, Cultural Anthropology (3); Soc. 125, Cultural History of the Negro (3); Hist. 133 and 134, History of Ideas in America (3, 3); Electives (6).

II. THE HUMANITIES

Art

Two types of majors are offered in art: Art Major A for those who take the art curriculum as a cultural subject and as preparation for a career for

which art is a necessary background; Art Major B for those who prepare themselves for creative work on a professional basis.

In both types the student begins with the basic courses, and moves to more advanced study of the theory of design and of the general principles involved in visual expression. A large amount of study takes the form of actual practice of drawing and painting. The student, in this way, gains a knowledge of the vocabulary of drawing and painting, and of the methods and procedures underlying good quality of performance.

Art Major B emphasizes the development of craftsmanship and the creative faculty. Art Major A, while including the basic studio courses, necessarily places emphasis on general history, composition, and art appreciation, with subsequent choices of special art epochs for greater detailed study.

Art History and Art Appreciation are of special interest to students majoring in English, History, Languages, Philosophy, or Music. It is suggested that they schedule Art 9, 10, and 11, Historical Survey of Painting, Sculpture, and Architecture, and History of American Art, as excellent supplementary study for a fuller understanding of their major. Art 20 is recommended for English, Languages, Philosophy, Home Economics, and Education majors. Art 10, History of American Art, is advised for majors in the American Civilization courses. Home Economics and Horticulture majors are encouraged to schedule basic art courses as a useful means of training observation and developing understanding of, and proficiency in, the visual arts.

Courses required in all art majors: Art 1—Charcoal Drawing (3); Art 5—Still Life Painting (3); Art 9, 11—Historical Survey of Painting, Sculpture and Architecture (3, 3); Art 20—Art Appreciation (2).

Course required in Cultural Art major: Art 10—History of American Art (1).

Course Required in Creative Art major: Art 7—Landscape Painting (3).

Classical Languages and Literatures

Twelve hours of underclass requirements must be completed before a student may begin work toward a major. These requirements are satisfied by the first four courses taken, beginning from the level of initial registration in accordance with the schedule which precedes the list of course offerings in this catalog. No placement tests are given in the Classical Languages.

The major and minor requirements are those generally in effect in the College of Arts and Sciences and stated in the appropriate section above.

Comparative Literature

Comparative Literature courses are offered by the Classics, the English, and the Foreign Language Departments. When it is so recommended by the student's adviser comparative literature courses may be counted toward a major or minor in English. Requirements for a major in comparative liter-

ature include a knowledge of one foreign language and the Introductory survey, Comparative Literature 101 and 102.

English

Students majoring in English, particularly those who plan to do graduate work, are urged to take work in foreign language in addition to that required for graduation. In selecting minor or elective subjects, it is recommended that students give special consideration to the following: Latin, Greek, French, German, philosophy, history, and fine arts.

Students who major in English must choose 21 hours of the possible 24-40 hours required of a major from courses in several groups, as follows:

1. Three hours in language (Eng. 8, 101, 102, 104).
2. Six hours in major figures (Eng. 104, 112, 115, 116, 121; 155 or 156).
3. Six hours in survey or type courses (Eng. 110, 111, 112, 113, 120, 122, 123, 125, 126, 129, 130, 134, 135, 139, 140, 143, 144, 145, 157).
4. Six hours in American literature (Eng. 148, 150, 155, 156).

Honors in English: Seniors whose major is English may become candidates for honors in English provided that they have an average of at least 3.0 in all English courses and 3.5 in English courses numbered above 100. Candidates must take the Honors Conference Course (Eng. 199); those who pass this course with distinction and maintain an average of 3.5 in other English courses will be certified for graduation with honors in English.

Foreign Languages and Literature

The underclass department requirements which must be satisfied before a student can begin work toward a major are the courses numbered 1, 2, 4, and 5 (or 1, 2, 6 and 7, or 1, 2, 4 and 17).

Two types of majors are offered in French, German, or Spanish: one for the general student or the future teacher, and the other for those interested in a rounded study of a foreign area for the purpose of understanding another nation through its literature, history, sociology, economics, and other aspects.

Literature and Language Major: Language and literature as such are stressed in the first type of major. Specific minimum requirements beyond the first two years are a semester each of intermediate and advanced conversation (Fr., Ger., or Span. 8 or 9 and 80 or 81), six hours of the introductory survey of literature (Fr., Ger., or Span. 75 and 76), one semester of advanced composition (Fr., Ger., or Span. 121), and any twelve hours in literature courses numbered 100 or above—a total of 26 semester hours. Beyond this minimum further courses in the Department are desirable and as electives work in American and in Comparative Literature is strongly recommended; Comparative Literature 101 and 102 are required.

Foreign Area Major: The area study major endeavors to provide the student with a knowledge of various aspects of the country whose language he is studying. Specific minimum requirements beyond the first two years are seven hours of conversation (Fr., Ger., or Span. 8, 9, and 80 or 81), six hours of review grammar and composition (Fr., Ger., or Span. 71 and 72), six hours in civilization (Fr., Ger., or Span. 161 and 162 or 163 and 164), and six additional hours in courses numbered 100 or above—a total of 25 semester hours. In addition, Comparative Literature 101 and 102 are required. The student takes, as a minor, eighteen hours in geography, history, political science, sociology, economics, or other human science courses, distributed through these fields in consultation with advisers in the Foreign Language Department.

Special Honors: The distinction of special honors in French, German, or Spanish is awarded to majors who, in addition to fulfilling the above-mentioned requirements, have completed certain special readings and passed a comprehensive examination in their field of concentration. The purpose of honors in languages is (1) to encourage independent reading and (2) to coordinate the knowledge afforded by the various individual courses which constitute the major curricula. The work leading to honors is done in conferences between students and professors. It should be begun early in the student's collegiate career, and in no case may students declare their candidacy for honors later than the beginning of their senior year.

Music

The functions of the Department are (1) to help the general student develop sound critical judgment and discriminating taste in the art of music; (2) to provide professional training based on a foundation in the liberal arts; (3) to prepare the student for graduate work in the field; (4) to prepare him to teach in the public schools. To this end, two degrees are offered: the Bachelor of Music, with a major in theory-composition, history-literature, or applied music; and the Bachelor of Arts, with a major in music. The Bachelor of Science degree, with a major in music education, is offered in the College of Education.

Courses in music theory, literature, and applied music are open to all students who have completed the specified prerequisites or their equivalents. The University Orchestra, Band, Chapel Choir, Women's Chorus, and Men's Glee Club are likewise open to qualified students.

The Bachelor of Music Degree

The curriculum leading to the degree of Bachelor of Music is designed for students who wish to prepare for careers as performers or private teachers, or to prepare for music teaching on the college level. The course requirements in the three major areas may be summarized as follows. A list of specific courses is available in the departmental office.

Major in *Theory-Composition* *History-Literature* *Applied Music*

Academic courses			
specified*	42 sem. hrs.	42 sem. hrs.	42 sem. hrs.
unspecified	9	9	10
Theory and Literature			
lower division	27	23	23
upper division	16	22	13
Applied Music	26	24	32

In addition, eight semester hours in ensemble courses; Air Science (men)**, Health (women)**, and Physical Activities **.

The Bachelor of Arts Degree

The curriculum leading to the Bachelor of Arts degree with a major in music is designed for students whose interests are cultural rather than professional. The departmental requirements include sixteen semester hours in music theory, eighteen semester hours in music history and literature, eight semester hours in applied music, in addition to not more than six semester hours in the larger ensembles. A list of specific courses is available in the departmental office.

Philosophy

The department's undergraduate courses are designed to help students attain philosophical perspective, clear understanding, and sound critical evaluation concerning the nature of man, his place in the universe, and the significance of the principal types of human experiences and activities.

To those students who wish to explore the field of philosophy, but who have not sufficient free electives to take some of the more specialized courses offered by the department, three general courses are available. Phil. 1, Philosophy for Modern Man, is a Group I elective in the American Civilization Program. As such it is directed in part toward examining the philosophical basis of American ideas and ideals. But it is concerned also with the general educational aspects of the Program and hence deals with the larger philosophical questions relating to the nature of man as a thinking, feeling and valuing member of human society.

In addition to Philosophy 1 the department offers two other courses designed as electives for students who wish to acquaint themselves with the ideas of some of the great philosophers: Philosophy 123, 124, Philosophies Men Live By.

To students in other fields who wish to explore the philosophy of their subjects, the department offers a choice among a group of specifically related

*University requirement: American Civilization Program, 24 semester hours; College of Arts and Sciences requirements: 12 semester hours in foreign languages; and 6 semester hours in mathematics or science.

**As required in the general B.A. curriculum.

courses: 52, Philosophy in Literature; 53, Philosophy of Religion; 135, Philosophy of Social and Historical Change; 151, Ethics; 153, Philosophy of Art; 154, Political and Social Philosophy; 155, Logic; 156, Philosophy of Science; 158, Philosophy of Language.

To students of literature, history, or the history of ideas, the department offers historical courses in ancient, medieval, modern, recent and contemporary, Oriental, and American philosophy. The last course is particularly relevant for students of American Civilization.

The courses in Logic (41 and 155) are recommended in the Arts-Law curriculum and the Government and Politics program.

Minors in philosophy are especially suitable for students majoring in English, Literature, the Social Sciences, American Civilization, Psychology, and in the pre-Ministry and pre-Law fields. Interested students should consult with the chairman of the department.

Freshmen and Sophomores planning to major in Philosophy should consult the chairman of the department about preparation for the major.

Speech and Dramatic Art

The courses in this department have two main functions: (1) to provide training in basic oral communication skills to meet the general needs of undergraduates of the university; (2) to provide integrated specialized training for students who wish to major or minor in speech.

A major may be taken in the Speech Department in one of two general areas, the speech arts or the speech sciences. The speech arts include theater, radio and television, public speaking, and oral interpretation; the speech sciences include phonetics, semantics, speech pathology and audiology. The undergraduate program provides a level of training that will prepare students to enter several professional fields. Specifically, these fields are: (1) teaching speech and dramatic art or directing these activities; (2) radio and television; (3) speech and hearing therapy. In addition, adequate preparation and training for graduate work is provided.

Minors in speech are adapted to meet the needs of students majoring in English, the Social Sciences, Journalism and Public Relations, Elementary Education, Nursery School—Kindergarten Education, pre-Law and pre-Ministry fields.

Prerequisites for all majors in speech are Speech 1, 2, 3, 5 and 6, and Zoology 1. Major requirements: 30 hours of courses in speech with 15 hours of courses numbered 100 and above, in either the speech arts or speech sciences. Speech 111, Seminar; is required of all majors in speech. No grades of D in the major field will be counted toward completing the major requirements for graduation.

Specific requirements for professional training in speech and hearing therapy include completion of the general requirements for speech majors with

the following additions: Zoology 14, 15; Psychology 1, 5, 131; a minimum of 21 hours of speech sciences at the 100 level.

Qualified students, depending upon specialized interests, are invited to participate in the activities of the University Theater, Radio-Television Guild, and the Calvert Debate Club.

III. THE SOCIAL SCIENCES

Economics

Students registered in the College of Arts and Sciences may major in Economics. During the freshman and sophomore years prospective economics majors should consult with their Lower Division Adviser in Arts and Sciences concerning preparation for the major. Normally Economic Developments (2, 2) is taken during the freshman year and Principles of Economics (3, 3) during the sophomore year.

Juniors and seniors are advised by the faculty of the Department of Economics, which is administered in the College of Business and Public Administration. In addition to the ten lower division credits listed above, Economics majors must complete a minimum of 26 credits with an average grade of not less than C. Advanced Economic Principles (3) and Elements of Statistics (3) are required. Other courses to meet the requirements of the major are to be selected with the aid of a faculty adviser. Descriptions of courses in Economics will be found in the catalog of the College of Business and Public Administration. Additional information about the curriculum in Economics may be obtained at the departmental office.

Geography

Geography is a recognized major field in Arts and Sciences leading to the A.B. degree. Arts and Sciences students may register for its courses and major in geography from a liberal arts point of view, although the department is administered by the College of Business and Public Administration. Freshmen and sophomores wishing to major in geography should consult their Lower Division advisers. Additional information about the geography program may be obtained at the departmental office.

The following courses are required: Geog. 10 and 11 (3, 3); Geog. 30 (3); Geog. 35 (3); Geog. 40 and 41 (3, 3); Geog. 170 (3); and 18 hours in other geography courses numbered 100 to 199.

The following science courses are required: Bot. 1 (4); Chem. 1 (4); Agron. 114 (4). The following supporting courses are also required: Bot. 113 (2); Econ. 31 and 32 (3, 3); Soc. 105 (3). Certain of these courses are applicable to the minor. Please consult Senior Adviser, Department of Geography.

Government and Politics

Although this department is administered by the College of Business and Public Administration, Government and Politics is a recognized major field for

students in the College of Arts and Sciences, leading to the A.B. degree. Freshman and sophomores wishing to major in Government and Politics should consult their Lower Division Advisers about preparation for the major; additional information about the Government and Politics program may be obtained at the departmental office. Juniors and seniors majoring in Government and Politics are advised by the faculty of that department.

For further information concerning the courses offered in Government and Politics, see the catalog of the College of Business and Public Administration. The Government and Politics curriculum described in that catalog does not apply to students in the College of Arts and Sciences. Such students must complete instead the following requirements:

1. At least 36 semester hours of Government and Politics.
2. No course in which the grade is less than C, made after September 1947, may be counted as part of the major work.
3. An adequate diversification of study in the various fields of Government and Politics, under the guidance of the faculty of the Department.

If desired, students may specialize in state and local government, public administration, public law, public policy, political theory, comparative government, or international relations.

History

The study of history is basic for the cultural background of all fields of knowledge. In addition, the Department of History offers a curriculum which is designed to assist students who wish to prepare themselves for entering several fields of professional activity. Specifically these fields are (1) teaching history and the social sciences at the secondary level; (2) the field of journalism, which requires a broad historical background; (3) research and archival work; (4) the diplomatic service. In addition, the department offers adequate preparation and training for those who intend to pursue higher degrees and prepare themselves for teaching at the college level.

Undergraduate history majors must complete the following departmental requirements:

1. Every major is required to complete a minimum of 24 semester hours in advanced courses, with the following exceptions: (a) the total may be reduced by 3 credit hours for those students who, in addition to the prerequisites, have taken 6 credits in other courses under the 100 level; and (b) the total may be reduced by 6 credit hours for those who, in addition to the prerequisites, have completed 12 semester hours in courses under the 100 level.
2. No less than 15 nor more than 18 semester hours in advanced courses should be taken in any one field of history, e. g., European, American, or Latin American.

3. Prerequisites for majors in history are History 5 and 6 (required of all college students) and History 1 and 2.
4. All majors are required to take the proseminar during their senior year.
5. No grades of D in the major field will be counted toward completing the major requirements for graduation.

Honors in History: A student whose major is in History and who maintains an approved average in his grades may read for honors in History. A candidate for honors is examined upon an approved individual program of readings in an area of his special interest. Application may be made to the head of the Department of History between the second semester of the sophomore year and the first semester of the senior year.

PSYCHOLOGY

The Department of Psychology is classed in both the Division of Social Sciences (for the B.A. degree) and the division of Biological Sciences (for the B.S. degree) and offers educational programs related to both of these fields. The functions of the undergraduate curriculum in Psychology are to provide an organized study of the behavior of man, in terms of the biological conditions and social factors which influence such behavior. In addition, the undergraduate program in Psychology is arranged to provide a level of training that will equip the students to enter certain professional pursuits which require a background in this field. It is important to note, however, that the undergraduate degree in Psychology is not in itself recognized as carrying any professional status.

Departmental requirements toward the B.A. degree with a major in Psychology are: Psych. 1, 21, 106, 145, 150; and two from among Psych. 128, 142, and 148; plus 9 additional hours in Psychology and/or other departments selected in conference with the student's major adviser. A minor program is organized to supplement the work in the major, and for the B.A. degree this minor program will ordinarily consist of courses in the Social Sciences. The departmental requirements for the Bachelor of Science degree are given elsewhere in these pages.

SOCIOLOGY

The major in Sociology offers a liberal education and at the same time provides a background for those professional fields which focus on an understanding of human relationships.

Departmental requirements consist of a minimum of 27 semester hours in Sociology (not including Sociology 1) and 18 hours in a minor. Of the latter at least 6 hours must be of 100 series courses in a single department. Sociology credit with a grade of less than C may not be counted toward the major requirement.

Courses required of all Sociology Majors:

Sophomore Year.....Sociology 2, Principles of Sociology
 Junior Year.....Sociology 183, Social Statistics
 Senior Year.....Sociology 186, Sociological Theory
 Senior YearSociology 196, Senior Seminar

There are several suggested areas of emphasis within the Sociology major, some with additional requirements:

- (1) General Sociology.
- (2) Anthropology: Soc. 5, 13 or 113, 105, 123, 124, 125, 136, and 141. (Recommended minor—History, Geography, or Zoology; recommended basic sciences—Zoology or Botany.
- (3) Community Studies: (Rural, urban, and suburban groups and their populations):—Soc. 13, 14, 112, 113, 114, 118, 121, 122. Recommended electives:—Economics, Education, Government and Politics, Geography).
- (4) Crime Control Curriculum (A four year preprofessional program in the field of crime and delinquency and their prevention and control):—Soc. 51, 52, 114, 118, 131, 145 or 147, 153, 154, 156, and 191; B. A. 10; Econ. 37. Required minor:—Psychology, including Psych. 1, 2 or 5, 125, 128 or 131, 142 or 150, 161 or elective. (Recommended science:—Zool. 1, 141, 15.)
- (5) Sociology—Education (Fulfills requirements for secondary teaching certification):—Minor requirements—Ed. Human Development Ed. 100 and 101, Ed. 140, 145, 148; Am. His. 6 s. hrs., European His. 6 s. hrs. and 6 s. hrs. 100 series History courses.
- (6) Social Institutions (The structure and functioning of social institutions including the family, religion, economic, governmental, and educational):—Soc. 62, 64, 113, 115, 136, 161, 164, 171.
- (7) Preprofessional Social Work Curriculum (provides (1) preprofessional preparation for entering a professional social work school, and (2) qualifications for certain social work positions for which post-graduate professional education is not required):—Soc. 13 or 14, 52, 118, 131, 171, 174, 191; Econ. 37; G & P. 4 or 5.
- (8) Social Psychology:—Soc. 5, 51, 112, 115, 123, 141, 144, 145. Minor—psychology or related field. (Recommended electives—Human Development Education and Zoology.)

GENERAL B.S. CURRICULUM

The curricula required of students majoring in departments of the Divisions of Biological Sciences and Physical Sciences vary much in regard to the year in which University and College required courses are scheduled in order to assure the proper sequential and prerequisite arrangement of major courses. The following curriculum, which gives the subjects required of students who plan to major in departments of the divisions of Biological or

Physical Sciences, is, therefore, quite flexible; individual program must be prepared in consultation with the assigned adviser. Lower division advisers and department heads have available copies of normal curricula for distribution to students who wish additional information about majors in departments of these divisions.

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government (or Soc. 1).....	3	....
*Soc. 1—Sociology of American Life (or G. & P. 1).....	....	3
Speech 7—Public Speaking.....	....	2
Mathematics - Science	8-9	8-10
A. S. 1, 2—Basic Air Force R.O.T.C. (Men).....	3	3
He. 2, 4—Health (Women).....	1	1
Physical Activities	1	1
Total	17-19	17-20
<i>Sophomore Year</i>		
Eng. 3, 4 or 5, 6—Composition and English or World Literature	3	3
His. 5, 6—History of American Civilization.....	3	3
**Foreign Language	3	3
Mathematics - Science	9-12	9-12
A.S. 3, 4—Basic Air Force R.O.T.C. (Men).....	3	3
Physical Activities	1	1
Total	16-20	16-20

IV. THE BIOLOGICAL SCIENCES

Curriculum for General Biological Sciences

This program has been prepared for the student who is interested in biology but whose interest has not yet centered in any one of the biological sciences. This program is also a suitable one for the pre-dental student who plans to earn the B.S. degree before entering dental school. This program, however, is not recommended for the pre-medical student. The program includes work in Bacteriology, Botany, Entomology, and Zoology, and introduces the student to the general principles and methods of each of these biological sciences. The student may then emphasize any one of these areas in completing his program.

By proper selection of courses during the junior and senior years, a student may concentrate his work sufficiently in one area of biology to be able to continue in graduate work in that field. However, a student who is definitely planning to do graduate work would be well-advised to major in one specific field of biology as soon as his interest becomes definite.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select French or

*See "The Program in American Civilization" on pages 34-35.

**A placement test is given during Registration Week for students wishing to pursue a language they have studied in high school. Some departmental curricula require German. Most of the departments prefer or require that the second year be in Scientific French or German (Fr. or Gr. 6, 7).

German to meet the foreign language requirement and Speech 7 (or Speech 1, 2) to fulfill the requirement in Speech.

Required introductory courses in the Biological Sciences: Bacteriology 1; Botany 1; Entomology 1; Zoology 1. These courses must be passed with an average grade of at least C. The pre-dental student must take Zoology 2 as well.

Required supporting courses in Mathematics and the Physical Sciences: Mathematics 10, 11; Chemistry 1, 3; Physics 10, 11. The student working in most areas of biology will also need a year of Organic Chemistry (Chemistry 31, 32, 33, 34 or Chemistry 35, 36, 37, 38). Additional work in Chemistry may also be required by the student's adviser, in accordance with the needs of the student's field of emphasis. The pre-dental student must include Chemistry 35, 36, 37, 38 in his program.

Advanced courses in the Biological Sciences: The student must complete at least 30 semester hours of advanced work selected from the fields of Microbiology, Botany, Entomology, and Zoology. Of these credits at least 18 must be at the 100 level and taken in at least two of the four departments. The following courses in Psychology may be counted as part of the required 30 semester hours but may not be used to satisfy the requirement of 18 semester hours at the 100 level: Psychology 106, 126, 136, 145, 180, 181, 195.

A junior or senior following this curriculum will be advised by the department in which he plans to do the most work.

Courses required in major or as supporting courses: Zool. 1—General Zoology (4); Bot. 1—General Botany (4); Chem. 1, 3—General Chemistry (4, 4); Ent. 1—Introductory Entomology (3); Bact. 1—General Bacteriology (4); Math. 10, 11—Algebra, Trigonometry and and Analytic Geometry (3, 3); Phys. 10, 11—Fundamentals of Physics (4, 4); electives in Biological Sciences (30).

MICROBIOLOGY

The Department of Microbiology functions with three purposes in view. One of these is to provide fundamental training for those students who choose bacteriology as a major subject. Two major fields of study are provided: (1) applied bacteriology, in preparation for such positions as dairy, sanitary, or agricultural bacteriologists in federal, state, and commercial laboratories, and (2) medical bacteriology, in relation to hospital, public health, and clinic laboratories. The second objective of the department is to provide desirable courses for those students who are majoring in closely allied departments and desire vital supplementary information. Every effort has been made to plan these courses so that they satisfy the demands of these related departments as well as the needs of those students who have chosen bacteriology as a major. The third purpose of the department is to encourage and foster original thought in the pursuit of research.

Microbiology Curriculum—The field of bacteriology is too vast in scope to permit specialization in the early stages of undergraduate study. Accord-

ingly, the applied curriculum outlined below includes the basic courses in bacteriology and allied fields.

The course in *Advanced General Bacteriology* (Bact. 5) is required for all microbiology majors, and should follow *General Bacteriology* (Bact. 1). *Bacteriology* 5 is not required as a prerequisite for upper division courses for majors in other departments provided the student has been introduced to certain aspects of bacteriology, or their equivalent, pertinent to their specialty. *Bacteriology* 1, however, is required.

A student planning a major in Microbiology should consult his adviser during the first year concerning his particular field of study and his choice of supporting courses. The supporting courses should be chosen only from the biological or physical sciences. The supporting courses in chemistry are listed below.

A grade of D in a course in bacteriology will not be counted toward completing the major requirements for graduation.

Courses required in major and supporting courses:—Bact. 1—General Bacteriology (4); Bact. 5—Advanced General Bacteriology (4); Bact. 101—Pathogenic Bacteriology (4); Bact. 131—Food and Sanitary Bacteriology (4); Bact. 60, 62—Bacteriological Literature (1, 1); Bact. 103—Serology (4); Bact. 161—Systematic Bacteriology (2); Chem. 1, 3—General Chemistry (4, 4); Chem. 31, 32, 33, 34—Elements of Organic Chemistry (3, 3); Chem. 19—Elements of Quantitative Analysis (4); Chem. 161, 163—Biochemistry (2, 2); Math. 10, 11—Algebra, Trigonometry and Analytic Geometry (3, 3); Physics 10, 11—Fundamentals of Physics (4, 4).

Medical Technology Program: This is a professional program intended for those students who wish to prepare for technical work in any type of a medical laboratory. Because of its technical nature, it is broader in requirements and allows fewer electives. By proper planning of one's schedule beginning in the sophomore year, courses in zoology may be taken in place of electives or certain courses in microbiology. These courses should include Zoology 1, General Zoology; Zoology 16, Human Physiology; Zoology 108, Animal Histology; Zoology 110, Parasitology; and the following courses in microbiology; Bacteriology 105, Clinical Methods; and Bacteriology 108, Epidemiology.

The student who elects this program should try to obtain summer employment in a medical laboratory. This program is so designed that a student, with proper planning, can prepare himself for admission to any of the training schools for medical technology located in various hospitals. These training schools require two, three or four years of collegiate work, and after one year of hospital apprenticeship, the student is eligible to take examinations for the Registry of Medical Technologists of the American Society of Clinical Pathologists (M.T.) if he so desires.

BOTANY

Botany is recognized as either a major or minor field in Arts and Sciences, leading to the B.S. degree. The Botany Department is administered by the

College of Agriculture, but students register for botany courses and major or minor in this subject just as if the department were in the College of Arts and Sciences. Course descriptions and further information about the Botany Department are given in the catalog for the College of Agriculture.

Freshmen and sophomores should consult their lower division adviser and also the Botany Department adviser, in planning the major program. The four lower division courses, General Botany—Bot. 1 and 2, Diseases of Plants—Bot. 20, and Plant Taxonomy—Bot. 11, total 14 credit hours and should be taken during the first two years. Sufficient upper division courses to give a total of 40 credit hours in botany must be taken. Included in these will be Plant Physiology—Bot. 101, Plant Microtechnique—Bot. 110, Plant Anatomy—Bot. 111, Plant Ecology—Bot. 102, and Structure of Economic Plants—Bot. 115. The botany electives chosen depend, in part, on the student's chief interest.

To support the courses in botany, major students are required to take General Chemistry—Chem. 1 and 3, Mathematics—Math. 10 and 11 as a minimum, Physics—Phy. 10 and 11, General Zoology—Zool. 1, General Bacteriology—Bact. 1, Genetics—Zool. 104, and 12 hours of a modern language, preferably German.

PSYCHOLOGY

The Department of Psychology is classed in both the Division of Biological Sciences and the Division of Social Sciences, and offers educational programs to both these fields. Further details on the undergraduate program in Psychology are given elsewhere in these pages.

Departmental requirements toward the B.S. degree with a major in Psychology are Psych. 1, 106, 145, 150, and Psych. 136 or 148, and Psych. 180 or 181, plus 9 additional hours in Psychology and/or other departments selected in conference with the student's major adviser. A candidate for the B.S. degree with a major in Psychology will offer as supporting courses 30 hours from among the following groups: Mathematics 10, 11, 18, 19, 20, 21, 130, 132; Physics 10, 11, 60, 104, 105, 109; Zoology 1, 2, 5, 14, 15, 102, 104. These 30 hours include the 12 that are required by the College of Arts and Sciences. The departmental requirements for the Bachelor of Arts degree are given elsewhere in these pages.

ZOOLOGY

Two courses of study have been established as described below. At least thirty-five hours of zoology are required for a major in the department. Of these thirty-five hours at least eighteen must be at the 100 level. Zoology 14, 15, 53, and 55S will not be counted as part of the Zoology major requirements. A grade of D in a course in zoology will not be counted toward completing the major requirements for graduation.

Zoology

Copies of the suggested curricula for majors in zoology who are inter-

ested in any phase of animal study, pre-medical training, and pre-dental training are available from advisers and from the Zoology office.

Courses required for all majors in zoology are: Zool. 1, 2—General Zoology and Advanced General Zoology (4, 4); Zool. 5—Comparative Vertebrate Morphology (4); Zool. 20—Vertebrate Embryology (4); Zool. 75 or 76—Journal Club (1); Zool. 102—General Animal Physiology (4); Zool. 104—Genetics (3); and Zool. 121—Principles of Animal Ecology (3).

Supporting courses must include the following: Math. 10, 11—Algebra, Trigonometry and Analytic Geometry (3, 3) or Math. 18, 19—Elementary Mathematical Analysis (5, 5); Phys. 10, 11—Fundamentals of Physics (4, 4); Chem. 1, 3—General Chemistry (4, 4); Organic Chemistry—Chem. 31, 32, 33, 34 (6) or Chem. 35, 36, 37, 38 (8); and one of the following courses: Bot. 2—Second semester of General Botany (4); Chem. 19—Elements of Quantitative Analysis (4); or Math. 20, 21—Calculus (4, 4).

Fisheries

The aquatic resources of Maryland offer an excellent opportunity for the study of fisheries and marine zoology. In addition to the courses specified for other majors in zoology, students interested in following the fisheries curriculum must take: Zool. 118—Invertebrate Zoology (4); Zool. 125—Fisheries Biology and Management (3); Zool. 126—Shellfisheries (3); and Zool. 127—Ichthyology (3).

Supporting courses must include, in addition to those specified above, the following: Chem 15—Qualitative Analysis (4); Chem. 19—Elements of Quantitative Analysis (4); German 1, 2—Elementary German (3, 3); German 6, 7—Intermediate Scientific German (3, 3).

The student in this curriculum is also required to spend part of his summers in practical work in fisheries.

V. THE PHYSICAL SCIENCES

Curriculum for General Physical Sciences

This program has been prepared for the student who desires an introduction to the physical sciences but whose interest has not yet centered in any one field of the physical sciences. The program includes some advanced work in Chemistry, Mathematics, and Physics, and permits the student to emphasize one of these fields without having to meet the full requirements for a major in one specific field. The program is suitable for the pre-medical or pre-dental student who plans to complete the requirements for the B.S. degree before entering medical or dental school. This program is also suitable for the woman student who is interested in science and wishes to become a technical assistant or technical writer in one of these fields, but who does not plan to do graduate work. The program is not recommended for students who may later do graduate work in mathematics or in one of the physical sciences.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select French

or German to meet the foreign language requirement and Speech 7 (or Speech 1, 2) to fulfill the requirement in Speech.

Required introductory courses in Mathematics and the Physical Sciences: Mathematics 18, 19; Chemistry 1, 3; Physics 10, 11 (or 20, 21). These courses must be passed with an average grade of at least C for the student to be eligible to continue with this program.

Required supporting courses for pre-medical or pre-dental students: The pre-dental student must include Zoology 1, 2 in his program and must include Chemistry 35, 36, 37, 38 in his advanced work in this program. The pre-medical student must include Zoology 1, 2, 5, 20 in his program and must include Chemistry 19, 35, 36, 37, 38 in his advanced work in this program. Students interested in technical writing should take English 7, in addition to the courses in English required of all students.

Advanced courses in Mathematics and the Physical Sciences: The student must complete at least 36 semester hours of advanced work selected from the departments of Chemistry, Mathematics, and Physics. Of these credits at least 18 must be at the 100 level and taken in at least two of the three departments. The student should normally take Calculus (Math. 20, 21) inasmuch as practically all the advanced work in Mathematics and Physics requires Calculus.

Chemistry

The science of chemistry is so broad that completion of a well-planned course of undergraduate study is necessary before specialization. The curriculum outlined below describes such a course of study. The sequence of courses given should be followed as closely as possible; it is realized, however, that some deviation from this sequence may be necessary toward the end of the program. All of the courses in chemistry listed, unless otherwise designated, are required of students majoring in chemistry.

First Year: Chem. 1, 3—General Chemistry (4, 4); Math. 18, 19—Elementary Mathematical Analysis (5, 5); Speech 7—Public Speaking (2). **Second year:** Chem. 15—Qualitative Analysis (4); Chem. 21—Quantitative Analysis (4); Chem. 35, 37—Elementary Organic Chemistry (2, 2); Chem. 36, 38—Elementary Organic Laboratory (2, 2); Math. 20, 21—Calculus (4, 4); German 1, 2—Elementary German (3, 3). **Third Year:** Chem. 123—Quantitative Analysis (4); Chem. 141, 143—Advanced Organic Chemistry (2, 2); Chem. 144—Advanced Organic Laboratory (2); Phys. 20, 21—General Physics (5, 5); German 6, 7—Intermediate Scientific German (3, 3); Electives (1-2, 2-3). **Fourth Year:** Chem. 101—Advanced Inorganic Chemistry (2); Chem. 187, 189—Physical Chemistry (3, 3); Chem. 188, 190—Physical Chemistry Laboratory (2, 2); Chem. 146—The Identification of Organic Compounds (2); Electives (5-8, 5-8); (English 7 is strongly recommended.)

Mathematics

This curriculum offers training in the fundamentals of Mathematics in preparation for teaching, industrial work, or graduate work in Mathematics.

No grade of D in the major field will be counted toward completion of the requirements for graduation in the mathematics curriculum. An average grade of C is required in the supporting courses.

The mathematics curriculum offers two options depending on the choice of electives in the Junior and Senior years.

Pure Mathematics option. Electives in mathematics must include three hours in each of the fields of algebra and geometry.

Applied Mathematics option. Electives in mathematics must include six hours in the fields of algebra and geometry, and at least six hours in the field of applied mathematics. Supporting courses will be selected from the Physical Sciences or Engineering in consultation with the Head of the department of Mathematics.

Honors in Mathematics

Students majoring in mathematics who complete freshman and sophomore courses in mathematics with distinction are eligible to try for honors in mathematics. To receive the honors degree in mathematics, a student must (1) complete the curriculum in mathematics with an average grade of B in all subjects; (2) earn a creditable grade in Math. 190, 191; (3) pass an honors examination in mathematics at the end of the senior year. Students who wish to try for honors in mathematics should apply to the Head of the Department, preferably by the conclusion of their sophomore year and certainly no later than the beginning of their senior year.

Courses required in major: Math. 18, 19—Elementary Mathematical Analysis (5, 5); Math. 20, 21—Calculus (4, 4); Math. 110, 111—Advanced Calculus (3, 3); Math. 114—Differential Equations (3); and not less than 15 credit hours of electives in mathematics. Supporting courses include Phys. 20, 21—General Physics (5, 5) and an approved program of at least 12 additional hours outside the Department, including at least 6 hours at the 100-level; these courses may be in the physical sciences or in another area chosen by the student. The foreign language requirement should be satisfied by either German or French.

Physics

The Physics curriculum is designed for students who desire training in the fundamentals of Physics in preparation for graduate work or teaching, and for positions in governmental and industrial laboratories. All students must take as their introductory physics course either Physics 10, 11, Fundamentals of Physics (4, 4), or Physics 20, 21, General Physics (5, 5). After the elementary physics course, courses specifically required as a part of the Physics major are Physics 50, 51, Intermediate Mechanics (2, 2); Physics 52, Heat (3); Physics 102, Optics (3); Physics 104, 105, Electricity and Magnetism (3, 3); Physics 118, Introduction to Modern Physics (3); Physics 119, Modern Physics (3); and at least four credits of laboratory. Supporting courses must include: Math. 18, 19, Elementary Mathematical Analysis (5,

5), and Math. 20, 21, Calculus (4, 4). Students who wish to be recommended for graduate work in Physics must maintain a B average and should also include as many as possible of the following courses: Physics 106, Theoretical Mechanics (3); Physics 116, Fundamental Hydrodynamics (3); Physics 120, Nuclear Physics (4); Physics 122, Properties of Matter (4); and Math. 110, 111, Advanced Calculus (3, 3). Recommended course programs are available from the Physics Department. Students may major in Physics only if a grade of C is attained in each semester of the elementary physics courses and in the required mathematics courses.

VI. PRE-PROFESSIONAL CURRICULA

COMBINED PROGRAM IN ARTS AND SCIENCES AND LAW

Some law schools will consider only those applicants who have completed a four-year college program leading to the A.B. or B.S. degree. Other law schools, including the School of Law of the University of Maryland, will accept applicants who have successfully completed a three-year program of academic work. Law schools do not prescribe the specific courses which the student should take in his pre-law work, but do require that the student follow one of the standard programs offered by the undergraduate college.

Four-year Program: The student who plans to complete the requirements for the A.B. or B.S. degree before entering law school should select one of the major fields for concentration. Pre-law students most commonly select one of the following subjects as their major: American Civilization, Economics, English, Government and Politics, History, Philosophy, Psychology, Sociology, Speech. During his first two years, the pre-law student will normally follow the General A.B. Curriculum described earlier in these pages. During his junior and senior year, the pre-law student will complete the major and minor requirements for the A.B. degree. The requirements in the various major fields are described elsewhere in this catalog.

Three-year Program: The student who plans to enter law school at the end of his third year should follow the General A.B. Curriculum during his first two years. During his junior year he will complete the requirements for a minor (18 semester hours) in one of the fields of concentration. He will also be able to take some additional courses as electives. His program for the first three years must include all of the basic courses required for a degree from the College of Arts and Sciences and a minor of 18 semester hours as approved by his pre-law adviser. He must earn a total of 92 academic semester hours, exclusive of the credits in ROTC (men), Health (women), and Physical Education required of all undergraduate students.

Combined degree in Arts and Sciences and Law: The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Law of the University of Maryland will be eligible for the Bachelor of Arts degree after the successful completion of one year of full-time courses in the School of Law in Baltimore (or the equivalent in semester hours of work in the Evening Division of the School of Law). The completion of a year's work in the Law School consti-

tutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of required work in ROTC (men), Health (women), and Physical Activities. The student must earn at least a C average in all of his work at College Park, and at least a C average in 28 semester hours of work in the School of Law. A student who enters the combined program with advanced standing must complete the final 30 academic semester hours of pre-law work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Arts by the Faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Law.

The course of study at the School of Law requires three years of full-time work for completion. Students who successfully complete the program are awarded the degree of Bachelor of Laws.

COMBINED PROGRAM IN ARTS AND SCIENCES AND DENTISTRY

Candidates for admission to dental schools should normally plan to take at least a three-year undergraduate program. Although the School of Dentistry of the University of Maryland considers some applications from students with only two years of undergraduate preparation, it requires three years of the great majority of its candidates and expects these candidates to meet the full requirements of the combined degree in Arts and Sciences and Dentistry as described below.

Certain science courses are prescribed for all candidates for dental school: Zoology 1, 2; Chemistry 1, 3, 35, 36, 37, 38; Mathematics 10, 11 (or 18, 19); Physics 10, 11 (or 20, 21). These courses must be included in any pre-dental program. The student who wishes to be a candidate at the end of his second year must complete all of these courses during the first two years. All requirements must be completed by June of the year in which the student expects to enter dental school.

Neither successful completion of a pre-dental program nor of degree requirements guarantees admission to a dental school. All dental schools, including that of the University of Maryland, have their own admission requirements and procedures. Dental Schools expect candidates to attain an academic average substantially higher than the minimum average required for graduation from college. Through its pre-dental advisers and its Committee on the Evaluation of Pre-Dental Students this college attempts to assist its applicants with their problems.

Four-year program: The student electing this program should select one of the major fields in which the A.B. or B.S. degree is offered. Pre-dental students following the four-year program most commonly select one of the following subjects as their major field: Bacteriology, General Biological Sciences, General Physical Sciences, Psychology, Zoology. These programs are described elsewhere in this catalog. However, a student may meet dental school requirements in most of the majors offered in the College of Arts and Sciences, provided that he includes in his program the science courses specifically prescribed by dental schools. The student's pre-dental adviser will

assist the student in planning a program which will meet both the dental school requirements and also the requirements for the A.B. or B.S. degree.

Three-year program: The student electing to follow this program must complete all the courses specially required by the dental school. He must earn a total of 90 academic semester hours in addition to the credits in ROTC (men), Health (women), and Physical Activities required of all undergraduate student. He must complete a minor (18 semester hours) as approved by his pre-dental adviser. He must follow very carefully the program as outlined below:

Freshman year: English 1, 2; Zoology 1, 2; Chemistry 1, 3; Mathematics 10, 11; ROTC (men); Health 2, 4 (women); Physical Activities.

Sophomore year: English 3, 4 or 5, 6; Sociology 1; Government and Politics 1; Chemistry 35, 36, 37, 38; History 5, 6; Foreign Language (French or German or Latin); ROTC (men); Physical Activities.

Note: Students planning to apply for admission to Dental School at the end of the second year must take Physics 10, 11, in place of History 5, 6. The student who takes the two-year program will not be eligible for the Bachelor of Science degree.

Junior year: Physics 10, 11; Foreign Language (continued); Speech 7; minor courses as approved by a pre-dental adviser; electives.

Any student who begins the three-year program may change to a four-year program by making a choice of a major field and adjusting his program accordingly. However, the student is warned that some courses necessary in certain majors must be taken in the sophomore year in order for the student to be eligible for the more advanced courses in that field given in the junior and senior year.

Combined degree in Arts and Sciences and Dentistry: The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Dentistry of the University of Maryland will be eligible for the Bachelor of Science degree after successful completion of the first year in the School of Dentistry. The completion of a year's work in the School of Dentistry constitutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of required work in ROTC (men), Health (women), and Physical Activities. The qualitative grade requirements of the College of Arts and Sciences and of the University must also be fulfilled. A student who enters the combined program with advanced standing must complete the final 30 semester hours of pre-dental work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Science by the Faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Dentistry.

The course of study at the School of Dentistry requires four years for completion. Students who successfully complete the program are awarded the degree of Doctor of Dental Surgery.

COMBINED PROGRAM IN ARTS AND SCIENCES AND MEDICINE

The student planning to request admission to a medical school must pursue a course of study which meets the requirements prescribed by the Council of Medical Education of the American Medical Association and those added or recommended by the particular medical school of his choice.

Some medical schools will consider only those applicants who will have completed a four-year college program and will have earned the A.B. or B.S. degree at the time of entrance into medical school. Other medical schools will consider applicants who will have completed three years of college work. The School of Medicine of the University of Maryland accepts some candidates who will have completed only three years of college work but looks with more favor upon the four-year program for most students. Both the four-year program and the three-year program are described below. In both programs all required science courses must be completed by June of the year in which the student expects to enter medical school.

Neither successful completion of a pre-medical program nor of degree requirements guarantees admission to any medical school. All medical schools, including that of the University of Maryland, have their own admission requirements and procedures. Medical schools expect candidates to have attained an academic average substantially higher than the minimum average required for graduation from college. Through its Committee on the Evaluation of Pre-medical Students this college attempts to assist its applicants with their problems.

Four-year Program: The student electing this program should select one of the major fields in which the A.B. or B.S. degree is offered. In addition to meeting all general degree requirements and the specific requirements of the major selected, the pre-medical student must include in his program the following required pre-medical courses: Zoology 1, 2, 5, 20; Chemistry 1, 3, 19, 35, 36, 37, 38; Mathematics 10, 11 (or 18, 19); Physics 10, 11 (or 20, 21).

Pre-medical students, following the four-year program, most commonly select one of the following subjects as their major field: Bacteriology, General Physical Sciences, Psychology, Zoology. These programs are described elsewhere in this catalog. However, a student may meet medical school requirements in most of the majors offered in the College of Arts and Sciences, provided that he includes in his program the individual courses specifically prescribed by medical schools. The student's pre-medical adviser will assist the student in planning a program which will meet both the medical school requirements and also the requirements for the A.B. or B.S. degree.

Three-year program: The student electing to follow this program must complete all of the courses specifically required by the medical school. He must earn a total of 90 academic semester hours in addition to the credits in ROTC, (men), Health, (women), and Physical Activities required of all undergraduate students. He must follow very carefully the program as outlined in the following paragraphs.

Freshman year: English 1, 2; Government and Politics 1; Sociology 1; Mathematics 10, 11; Chemistry 1, 3; Zoology 1, 2; ROTC (men); Health 2, 4 (women); Physical Activities.

Sophomore year: English 3, 4 or 5, 6; Chemistry 35, 36, 37, 38; Zoology 5, 20; Foreign Language (French or German or Latin); ROTC (men); Physical Activities.

Junior year: History 5, 6; Foreign Language (continued); Chemistry 19; Physics 10, 11; Speech 7; Psychology 1; minor courses as approved by the pre-medical adviser.

Any student who begins the three-year program may change to the four-year program by making a choice of a major field and adjusting his program accordingly. However, the student is warned that some courses necessary in certain majors must be taken in the sophomore year in order for the student to be eligible for the more advanced courses in that field given in the junior and senior years. The majority of students would therefore be wise to plan a four-year program on entrance and not attempt the highly concentrated three-year program.

Combined degree in Arts and Sciences and Medicine: The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Medicine of the University of Maryland will be eligible for the Bachelor of Science degree after successful completion of the first year in the School of Medicine. The completion of a year's work in the School of Medicine constitutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of the required work in ROTC (men), Health (women), and Physical Activities. The qualitative grade requirements of the College of Arts and Sciences and of the University must also be fulfilled. A student who enters the combined program with advanced standing must complete the final 30 semester hours of pre-medical work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Science by the Faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Medicine.

The course of study at the School of Medicine requires four years for completion. Students who successfully complete the program are awarded the degree of Doctor of Medicine.

AMERICAN CIVILIZATION

Committee on American Civilization; Professor Bode,

Executive Secretary; Professors Gewehr, Hoffsommer, Murphy, Plischke.

Amer. Civ. 137, 138. Conference Course in American Civilization (3, 3).
First and second semesters. (Bode and cooperating specialists.)

Four American classics (drawn from fields of the departments of English, Government and Politics, History, and Sociology, which cooperate in the program) are studied each semester. Specialists from the appropriate departments lecture on these books.

For the first semester of this academic year the classics are: Franklin's *Autobiography*, De Tocqueville's *Democracy in America*, Schlesinger's *The Age of Jackson*, and Thoreau's *Walden*; for the second semester, Twain's *The Adventures of Huckleberry Finn*, Howells' *The Rise of Silas Lapham*, the Lynds' *Middletown*, and Myrdal's *An American Dilemma*. Through these books and the lectures on them, the student's acquaintance with American culture is brought to a focus.

This course is required for seniors majoring in the American Civilization program. The course also counts as major credit in any of the four cooperating departments; a student may take either or both semesters.

The student majoring in American Civilization can obtain his other courses principally from the offerings of the departments of English, History, Government and Politics, and Sociology.

ART

Professor Wharton; Associate Professors Siegler, Lembach and Maril; Instructors Grubar and Stites.

Art. 1. Charcoal Drawing (Basic Course) (3)—Three two-hour laboratory period per week. (Siegler.)

Drawing from casts, preparatory to Life and Portrait drawing and painting. Stress is placed on fundamental principles, such as the study of relative proportions, values, and modeling, etc.

Art. 2. Charcoal Drawing (3)—Three two-hour laboratory periods per week. (Siegler.)

Drawing from model, (head and figure) with emphasis on structure and movement.

Art 3. Rendering (2)—Two two-hour laboratory periods per week. (Stites.)

Methods of rendering architectural and landscape architectural drawings. Included are: techniques of monotone wash, water color, and the use of perspective, shades, and shadows.

Art 5. Basic Design (3)—One lecture hour and five laboratory hours per week. (Lembach.)

A basic course in design for beginners, consisting of the theory and practice of design. Theory of design deals with design elements such as line, shape, form, etc., and design principles such as contrast, balance, rhythm, etc. Design practice consists of working with pencil, pen, water color, casein, and other painting media in terms of organization, representation and space.

Art 6. Still Life (3)—One lecture hour and five laboratory hours per week. Prerequisite, Art 5. (Wharton.)

A continuation of Art 5 with emphasis on more advanced still life painting problems with different media.

Art 7, 8. Landscape Painting (3, 3)—Three two-hour laboratory periods per week. (Maril.)

Drawing and painting; organization of landscape material with emphasis on compositional structure.

Art 9. Historical Survey of Painting, Sculpture, and Architecture (3).
(Grubar and Stites.)

An understanding of the cultures from Prehistoric times to the Renaissance, as expressed through painting, sculpture, and architecture.

Art 10. History of American Art (1). (Grubar.)

A resume of the development of painting, sculpture and architecture in this country.

Art 11. Historical Survey of Painting, Sculpture, and Architecture (3).
(Grubar and Stites.)

Designed to continue the survey begun in Art 9. The course is concerned with the development of painting, sculpture, and architecture from the Renaissance to the present day.

Art 13, 14. Elementary Sculpture (2, 2)—Two two-hour laboratory periods per week. (Maril.)

Study of three-dimensional compositions in round and bas-relief. Mediums used: clay, plasteline.

Art 15. Fundamentals of Art (3)—Three two hour laboratory periods per week. (Lembach.)

This course emphasizes the fundamental principles of the creative, visual arts for those wishing to teach. It includes elements and principles of design, perspective, and theory of color. Studio practice is given in the use and application of different media.

Art 20. Art Appreciation (2). (Lembach.)

An introduction to the technical and aesthetic problems of the artist. The student becomes acquainted with the elements that go into a work of the visual arts. He is made aware of the underlying structure that results in the "wholeness" of an art work. He will see examples (original and reproductions) of masterpieces of art.

Art 22. History of American Art (3)—This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. (Grubar and Stites.)

The development of painting, sculpture and architecture in America from the Colonial period to the present.

Art 100. Art Appreciation (2). (Grubar.)

This course enables students to get a basis for understanding works of art. It investigates the forms and backgrounds of painting, sculpture and architecture.

Art 102, 103. Creative Painting (3, 3)—Three two-hour laboratory periods per week. Prerequisites, Art 1, 5, and 7. (Maril.)

Assignments of pictorial compositions aimed at both mural decoration and easel picture problems. The formal values in painting are integrated with the student's own desire for personal expression.

Art 104, 105. Life Class (Drawing and Painting, Intermediate) (3, 3)—Three two-hour laboratory periods per week. Prerequisites, Art 1 and 5. (Seigler.)

Careful observation and study of the human figure for construction, action, form, and color.

Art 106, 107. Portrait Class (Drawing and Painting) (3, 3)—One lecture hour and five laboratory hours per week. Prerequisites, Art 1 and 5. (Wharton.)

Thorough draftsmanship and study of characterization and design stressed.

Art 108, 109. Modern Art (2, 2). (Grubar.)

A survey of the developments in various schools of modern art. Works of art analyzed according to their intrinsic values and in their historical background. Collections of Washington and Baltimore are utilized.

Art 113, 114. Illustration (3, 3)—Two three-hour laboratory periods per week. Prerequisites, Art 1, 5, 104. (Sieglar.)

This course is designed for the purpose of channeling fine art training into practical fields, thereby preparing the student to meet the modern commercial advertising problems. Special emphasis will be placed upon magazine and book illustrating.

Art 115, 116. Still Life Painting (Advanced) (3, 3)—Two three-hour laboratory periods per week. Prerequisite, Art. 6. (Wharton.)

This course is for those who have completed Art 6 and wish to specialize in Still Life Painting, and more creative work.

Art 154, 155. Life Drawing and Painting (Advanced) (3, 3)—Three two-hour laboratory periods per week. Prerequisite, Art. 105. (Sieglar.)

This course is for those who have completed Art 105 and wish to develop greater proficiency in the use of the figure in creative work.

Art 156, 157. Portrait Painting (Advanced) (3, 3)—Two three-hour laboratory periods per week. Prerequisite, Art 106, 107. (Wharton.)

This course is for those who have completed 106, 107 and wish to specialize in portraiture.

Art 185, 186. Renaissance and Baroque Art in Italy (2, 2).—Prerequisite, Art 11. (Grubar and Stites.)

The first term is concerned with the emergence and development of Renaissance painting, sculpture, and architecture through the first quarter of the 16th century. In the second term Mannerism and the Baroque phases are discussed.

Art 188, 189. History of 16th and 17 century Painting (2, 2)—Prerequisite, Art. 11. (Grubar.)

A study of the development of painting and related arts. The first semester study will center on Italian painting in the 16th and 17th century and the emergence of

Baroque style. During the second semester, the paintings of France, Spain, England, and the Low Countries will be considered.

Art 190, 191. Special Problems in Art (3, 3)—Two three-hour laboratory periods per week. Permission of Department Head. (Staff.)

Designed to offer the advanced art student special instruction in areas not offered regularly by the Department.

MICROBIOLOGY

Professors Faber, Hansen, Pelczar; Visiting Professors Hilleman, Warren; Associate Professors Laffer, Doetsch; Lecturer Kent.

Bact. 1. General Bacteriology (4)—First and second semesters. Summer School. Two lecture and two two-hour laboratory periods a week. (Pelczar.)

The physiology, culture and differentiation of bacteria. Fundamental principles of microbiology in relation to man and his environment. Laboratory fee, \$10.00.

Bact. 5. Advanced General Bacteriology (4)—Second semester. Summer school. Two lecture and two two-hour laboratory periods a week. Prerequisite, Bact. 1 and Chem. 3. (Laffer.)

Emphasis will be given to the fundamental procedures and techniques used in the field of bacteriology. Lectures will consist of the explanation of various procedures. Laboratory fee, \$10.00.

Bact. 51. Household Bacteriology (3)—Second semester. Two lecture and one two-hour laboratory periods a week. For home economics students only. (Doetsch.)

Morphology and Physiology of the bacteria, yeasts, and molds. Application of the effect of chemical and physical agents in the control of microbial growth. Relationship of microbiology to home sanitation, food preservation and manufacture: personal and community hygiene. Laboratory fee, \$10.00.

Bact. 55. Sanitary Bacteriology for Engineers (2)—First semester. One lecture and one two-hour laboratory period a week. For junior and senior students in engineering only. (Laffer.)

Discussion of the fundamental principles of bacteriology and their relationship to water supply, sewage disposal, and other sanitary problems. Demonstration of these principles in the laboratory. Laboratory fee, \$10.00.

Bact. 60, 62. Bacteriological Literature (1, 1)—First and second semesters. One lecture period a week. Prerequisite, a major in bacteriology with junior standing. Introduction to periodical literature, methods, interpretation and presentation of reports. (Doetsch.)

For Advanced Undergraduates and Graduates

Bact. 101. Pathogenic Bacteriology (4)—First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Bact. 5. (Faber.)

The role of microorganisms in the diseases of man and animals with emphasis upon the differentiation and culture of bacterial species, types of disease, modes of disease transmission; prophylactic, therapeutic and epidemiological aspects. Laboratory fee, \$10.00.

Bact. 103. Serology (4)—Second semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Bact. 101. (Faber.)

Infection and resistance; principles and types of immunity; hypersensitiveness. Fundamental techniques of major diagnostic immunological reactions and their application. Laboratory fee, \$10.00.

Bact. 104. History of Bacteriology (1)—First semester. One lecture period a week. Prerequisite, a major or minor in microbiology. (Doetsch.)

History and integration of the fundamental discoveries of the science. The modern aspects of cytology, taxonomy, fermentation, and immunity in relation to early theories.

Bact. 105. Clinical Methods (4). First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, consent of instructor. (Faber.)

A practical course designed to integrate clinical laboratory procedures in terms of hospital and public health demands. Examination of sputum, feces, blood, spinal fluids, urine, etc. Laboratory fee, \$10.00.

Bact. 108. Epidemiology and Public Health (2)—Second semester. Two lecture periods a week. Prerequisite, Bact. 1. (Faber.)

History, characteristic features, and epidemiology of the important communicable diseases; public health aspects of man's struggle for existence; public health administration and responsibilities; vital statistics.

Bact. 121. Advanced Methods (4)—Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, consent of instructor. (Hansen and Pelczar.)

The application of specialized equipment and technics for analysis of bacteriological problems. Laboratory fee, \$10.00.

Bact. 131. Food and Sanitary Bacteriology. (4)—Second semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Bact. 1. (Laffer.)

The relationship of microorganisms to fresh and preserved food and methods of control. Bacteriological and public health aspects of water supplies and sewage disposal, restaurant and plant sanitation, insect and rodent control. Laboratory fee, \$10.00.

Bact. 133. Dairy Bacteriology (4)—First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Bact. 1. (Doetsch.)

Relation of bacteria, yeasts, and molds to milk, cream, butter, ice cream, cheese, and other dairy products. Standard methods of examination, public health requirements, plant sanitation. Occasional inspection trips. Laboratory fee, \$10.00.

Bact. 135. Soil Bacteriology (4)—Second semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Bact. 1. (Hansen.)

The role played by microorganisms in the soil; nitrification, denitrification, nitrogen-fixation, and decomposition processes; cycles of elements; relationships of microorganisms to soil fertility. Laboratory fee, \$10.00.

Bact. 161. Systematic Bacteriology (2)—First semester. Two lecture periods a week. Prerequisite, 8 credits in microbiology. (Hansen.)

History of bacterial classification; genetic relationships; international codes of nomenclature; bacterial variation as it affects classification.

Bact. 181. Bacteriological Problems (3)—First and second semesters. Summer School. Prerequisites, 16 credits in microbiology. Registration only upon the consent of the instructor. (Faber.)

This course is arranged to provide qualified majors in bacteriology and majors in allied fields an opportunity to pursue specific bacteriological problems under the supervision of a member of the department. Laboratory fee, \$10.00.

For Graduates

Bact. 201. Medical Mycology (4)—First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, 30 credits in microbiology and allied fields. (Laffer.)

Primarily a study of the fungi associated with disease and practice in the methods of isolation and identification. Laboratory fee, \$10.00.

Bact. 202. Genetics of Microorganisms (2)—Second semester. Two lecture periods a week. Prerequisite consent of instructor. (Hansen.)

An introduction to genetic principles and methodology applicable to micro-organisms.

Bact. 204. Bacterial Metabolism (2)—First semester. Two lecture periods a week. Prerequisite, 30 credits in microbiology and allied fields, including Chem. 161 and 162. (Pelczar.)

Bacterial enzymes, nutrition of autotrophic and heterotrophic bacteria, bacterial growth factors, dissimilation of carbohydrate and nitrogenous substrates.

Bact. 206,208. Special Topics (1, 1)—First and second semesters. One lecture period a week. Prerequisite, 20 credits in microbiology. (Staff.)

Presentation and discussion of fundamental problems and special subjects in the field of bacteriology.

Bact. 210. Virology and Tissue Culture (2)—Second semester. Two lecture periods a week. Prerequisite, Bact. 101 or equivalent. (Warren.)

Characteristics and general properties of viruses and rickettsiae. Principles of tissue culture.

Bact. 211. Virology and Tissue Culture Laboratory (2)—Second semester. Two three-hour laboratory periods a week. Prerequisite, Bact. 101 or equivalent. Registration only upon consent of instructor. (Hilleman.)

Laboratory methods in virology and tissue culture. Laboratory fee, \$20.00.

Bact. 214. Advanced Bacterial Metabolism (1)—Second semester. One lecture period a week. Prerequisite, Bact. 204 and consent of instructor. (Pelezar.)

A discussion of recent advances in the field of bacterial metabolism with emphasis on metabolic pathways of microorganisms.

Bact. 280. Seminar-Research Methods (1)—First semester. (Staff.)

Discussions and reports prepared by majors in bacteriology engaged in current research; presentations of selected subjects dealing with recent advances in microbiology.

Bact. 282. Seminar-Bacteriological Literature (1)—Second semester. Presentation and discussion of current literature in microbiology. (Staff.)

Bact. 291. Research—First and second semesters. Summer School. (Staff.)

Credits according to work done. The investigation is outlined in consultation with and pursued under the supervision of a senior staff member of the department. Laboratory fee, \$10.00.

BOTANY

Students in the College of Arts and Sciences may select Botany as a major field, and may also take courses in this department for elective credit. For a description of courses, see the catalog of the College of Agriculture.

CHEMISTRY

Professors Drake, Pratt, Lippincott, Reeve, Rollinson, Svirbely, Veitch, White, Woods; Research Professor Baily; Associate Professors, Brown, Pickard, Stuntz; Assistant Professors Gerdeman, Carruthers, Dewey, Jaquith, Smedley.

Laboratory fees in Chemistry are \$10.00 per laboratory course per semester.

A. Analytical Chemistry

Chem. 15. Qualitative Analysis (4)—First semester. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 3. (Jaquith.)

Chem. 19. Elements of Quantitative Analysis (4)—First and second semesters. Summer School. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 3. (Smedley.)

An introduction to the basic theory and techniques of volumetric and gravimetric analysis. Primarily for students in engineering, agriculture, pre-medical, and pre-dental curricula.

Chem. 21. Quantitative Analysis (4)—Second semester. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 15. (Stuntz.)

An intensive study of the theory and techniques of inorganic quantitative analysis, covering primarily volumetric methods. Required of all students majoring in chemistry.

Chem. 123. Quantitative Analysis (4)—First semester. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 21. (Stuntz.)

A continuation of Chem. 21, including volumetric, gravimetric, electrometric, and colorimetric methods. Required of all students majoring in chemistry.

Chem. 166, 167. Food Analysis (3, 3)—First and second semesters. One lecture and two three-hour laboratory periods per week. Prerequisites, Chem. 33, 34. (———)

Chem. 206, 208. Spectrographic Analysis (1, 1)—One three-hour laboratory period per week. Registration limited. Prerequisite, Chem. 190, and consent of the instructor. (White.)

Chem. 221, 223. Chemical Microscopy (2, 2)—First and second semesters. One lecture and one three-hour laboratory period per week. Registration limited. Prerequisite, consent of instructor. Chem. 221 is a prerequisite for Chem. 223. (Stuntz.)

A study of the use of the microscope in chemistry. Chem. 223 is devoted to study of the optical properties of crystals.

Chem. 226, 228. Advanced Quantitative Analysis (2, 2)—First and second semesters. Two three-hour laboratory periods per week. Prerequisites, consent of instructor. (Stuntz.)

A study of advanced methods chosen to meet the needs of the individual.

Chem. 266. Biological Analysis (2)—Second semester. Two three-hour laboratory periods per week. Prerequisites, Chem. 19, 33, 34. (———)

A study of analytical methods applied to biological material.

B. Biochemistry

Chem. 41. Chemistry of Textiles (4)—Second semester. Two lectures and two three-hour laboratory periods per week. Prerequisites, Chem. 33, 34. (———)

A study of the chemistry of the principal textile fibers.

Chem. 81. General Biochemistry (2)—First semester. Two lectures per week. Prerequisites, Chem. 33, 34, or Chem. 37, 38. (Reeve.)

This course is designed primarily for students in home economics. Chem. 82 **MUST** be taken concurrently.

Chem. 82. General Biochemistry Laboratory (2)—First semester. Two three-hour laboratory periods per week. Prerequisite, Chem. 34, or Chem. 38. (Reeve.)

A course designed to accompany Chem. 81.

Chem. 161, 163. Biochemistry (2, 2)—First and second semesters. Two lectures per week. Prerequisite, Chem. 33, or Chem. 37. (Woods, Veitch.)

This course is designed primarily for students in agriculture, bacteriology, or chemistry, and for those students in home economics who need a more extensive course of biochemistry than Chem. 81, 82.

Chem. 162, 164. Biochemistry Laboratory (2, 2)—First and second semesters. Two three-hour laboratory periods per week. Prerequisite, Chem. 34, or Chem. 38. (Woods, Veitch.)

Chem. 261, 263. Advanced Biochemistry (2, 2)—First and second semesters. Two lectures per week. Prerequisite, Chem. 143, or consent of instructor. (Veitch.)

Chem. 262, 264. Advanced Biochemistry Laboratory (2, 2)—First and second semesters. Two three-hour laboratory periods per week. Prerequisite, consent of instructor. (Veitch.)

Chem. 265. Enzymes (2)—First semester. Two lectures per week. Prerequisite, Chem. 163. (Veitch.)

Chem. 268. Special Problems in Biochemistry (2-4)—First and second semesters. Two to four three-hour laboratory periods per week. Prerequisites, Chem. 161, 162, and consent of instructor. (Veitch.)

C. Inorganic and General Chemistry

Chem. 1, 3. General Chemistry (4, 4)—First and second semesters. Chem. 3, Summer School. Two lectures, one quiz, and two two-hour laboratory periods per week. Prerequisite, 1 yr. high school algebra or equivalent. (Staff.)

Chem. 11, 13. General Chemistry (3, 3)—Two lectures and one three-hour laboratory period per week. (Rollinson.)

An abbreviated course in general chemistry for students in home economics and pre-nursing. This course is open only to students registered in home economics and pre-nursing.

Chem. 101. Advanced Inorganic Chemistry (2)—Second semester. Two lectures per week. Prerequisites, Chem. 37, 123. (———)

Chem. 111. **Chemical Principles (4)**—Two lectures and two three-hour laboratory periods a week. Prerequisite, Chem. 3, or equivalent. Not open to students seeking a major in the physical sciences, since the course content is covered elsewhere in their curriculum. (Jaquith.)

A course in the principles of chemistry with accompanying laboratory work consisting of simple quantitative experiments. (Credit applicable only toward degree in College of Education.)

(One or more courses of the group 201-210 will be offered each semester depending on demand.)

Chem. 201, 203. **The Chemistry of the Rarer Elements (2, 2)**—First and second semesters. Two lectures per week. (White.)

Chem. 202, 204. **Advanced Inorganic Laboratory (2, 2)**—First and second semesters. Two three hour laboratory periods per week. (———)

Chem. 205. **Radiochemistry (2)**—Two lectures per week. (Rollinson.)

Chem. 207. **Chemistry of Coordination Compounds (2)**—Two lectures per week. (Rollinson.)

Chem. 209. **Non-Aqueous Inorganic Solvents (2)**—First or second semester. Two lectures per week. (Jaquith.)

Chem. 210. **Radiochemistry Laboratory (1-2)**—One or two four-hour laboratory periods per week. Registration limited. Prerequisites, Chem. 205 (or concurrent registration therein), and consent of instructor. (Rollinson.)

D. Organic Chemistry

Chem. 31, 33. **Elements of Organic Chemistry (2, 2)**—First and second semesters. Two lectures per week. Prerequisite, Chem. 3. (Woods.)

Organic chemistry for students in agriculture, bacteriology, and home economics.

Chem. 32, 34. **Elements of Organic Laboratory (1, 1)**—First and second semesters. One three-hour laboratory period per week. Prerequisites, Chem. 31, 33, or concurrent registration therein. (Woods and Staff.)

Chem. 35, 37. **Elementary Organic Chemistry (2, 2)**—First and second semesters. Chem. 37, Summer School. Two lectures per week. Prerequisite, Chem. 3. (Drake.)

A course for chemists, chemical engineers, premedical students, and pre dental students.

Chem. 36, 38. **Elementary Organic Laboratory (2, 2)**—First and second semesters. Chem. 38, Summer School. Two three-hour laboratory periods per

week. Prerequisites, Chem. 35, 37, or concurrent registration therein.

(Drake and Staff.)

Chem. 141, 143. Advanced Organic Chemistry (2, 2)—First and second semesters. Two lectures per week. Prerequisites, Chem. 37, 38. (Reeve.)

An advanced study of the compounds of carbon.

Chem. 144. Advanced Organic Laboratory (2-4)—First and second semesters. Summer School. Two or four three-hour laboratory periods per week. Prerequisites, Chem. 37, 38. (Pratt.)

Chem. 146, 148. The Identification of Organic Compounds (2, 2)—First and second semesters. Summer School. Two three-hour laboratory periods per week. Prerequisites, Chem. 141, 143, or concurrent registration therein. (Pratt.)

The systematic identification of organic compounds.

Chem. 150. Organic Quantitative Analysis (2)—First and second semesters. Two three-hour laboratory periods per week. Prerequisite, consent of the instructor. (Gerdeman.)

The semi-micro determination of carbon, hydrogen, nitrogen, halogen and certain functional groups.

(One or more courses from the following group, 240-253, will customarily be offered each semester.

Chem. 240. Organic Chemistry of High Polymers (2). (Bailey.)

An advanced course covering the synthesis of monomers, mechanisms of polymerization, and the correlation between structure and properties in high polymers. Prerequisite, Chem. 143.

Chem. 241. Stereochemistry (2)—Two lectures per week. (Woods.)

Chem. 245. The Chemistry of the Steroids (2)—Two lectures per week. (Pratt.)

Chem. 249. Physical Aspects of Organic Chemistry (2)—Two lectures per week. (Woods.)

Chem. 251. The Heterocyclics (2)—Two lectures per week. (Pratt.)

Chem. 253. Organic Sulfur Compounds (2)—Two lectures per week. (Dewey.)

Chem. 254. Advanced Organic Preparation (2 to 4)—First and second semesters. Summer School. Two to four three-hour laboratory periods per week. (Pratt.)

Chem. 258. The Identification of Organic Compounds, an Advanced Course (2 to 4)—First and second semesters. Summer School. Two to four three-hour laboratory periods per week. Prerequisites, Chem. 141, 143 or concurrent registration therein. (Pratt.)

E. Physical Chemistry

Chem. 181, 183. Elements of Physical Chemistry (2, 2)—First and second semesters. Two lectures per week. Prerequisites, Chem. 1, 3; Phys. 10, 11; Math. 10, 11; Chem. 19. (Brown.)

A course intended primarily for premedical students and students in the biological sciences. This course must be accompanied by Chem. 182, 184.

Chem. 182, 184. Elements of Physical Chemistry Laboratory (1, 1)—First and second semesters. One three-hour laboratory period per week. May be taken ONLY when accompanied by Chem. 181, 183. (Brown.)

The course includes quantitative experiments illustrating the principles studied in Chem. 181, 183.

Chem. 187, 189. Physical Chemistry (3, 3)—First and second semesters. Three lectures per week. Prerequisites, Chem. 19 or 21; Phys. 20, 21; Math. 20, 21; or consent of instructor. (Svirbely.)

A course primarily for chemists and chemical engineers. This course must be accompanied by Chem. 188, 190.

Chem. 188, 190. Physical Chemistry Laboratory (2, 2)—First and second semesters. Two three-hour laboratory periods per week. (Pickard.)

A laboratory course for students taking Chem. 187, 189.

Chem. 192, 194. Glassblowing Laboratory (1, 1)—First and second semesters. Summer School. One three-hour laboratory period per week. Prerequisite, consent of instructor. (Carruthers.)

The common prerequisites for the following courses are Chem. 187 and 189, or their equivalent. One or more courses of the group, 281 through 323, will be offered each semester depending on demand.

Chem. 281. Theory of Solutions (2)—First or second semester. Two lectures per week. Prerequisite, Chem. 307, or equivalent. (Svirbely.)

Chem. 285. Colloid Chemistry (2)—Two lectures per week. (Pickard.)

Chem. 287. Infra-red and Raman Spectroscopy (2)—Two lectures per week. Prerequisite, consent of instructor. (Lippincott.)

Chem. 289. Selected Topics in Advanced Colloid Chemistry (2)—Two lectures per week. Prerequisite, Chem. 285. (Pickard.)

- Chem. 295. Heterogenous Equilibria (2)—Two lectures per week.
(Pickard.)
- Chem. 299. Reaction Kinetics (3)—Three lectures per week. (Svirbely.)
- Chem. 303. Electrochemistry (3)—Three lectures per week. (Pickard.)
- Chem. 304. Electrochemistry Laboratory (2)—Two three-hour laboratory periods per week. Prerequisite, consent of instructor. (Svirbely.)
- Chem. 307. Chemical Thermodynamics (3)—Three lectures per week.
(Pickard.)
- Chem. 311. Physicochemical Calculations (2)—Offered in summer session only.
(Pickard.)
- Chem. 313. Molecular Structure (3)—Three lectures per week.
(Brown.)
- Chem. 317. Chemical Crystallography (3)—Three lectures per week. Prerequisite, consent of Instructor.
(Brown.)
- A detailed treatment of single crystal X-ray methods.
- Chem. 319, 321. Quantum Chemistry (3, 2)—Three lectures a week first semester. Two lectures a week second semester. (Lippincott, Mason.)
- Chem. 323. Statistical Mechanics and Chemistry (3)—Three lectures per week. Prerequisite, Chem. 307, or equivalent. (Brown.)

F. Seminar and Research

- Chem. 351. Seminar (1)—First and second semesters. (Staff.)
- Chem. 360. Research—First and second semesters, summer session.
(Staff.)

CLASSICAL LANGUAGES AND LITERATURES

Professor Avery and Assistant Professor Hubbe.

No placement tests are given in the Classical Languages. The following schedule will apply in general in determining the course level at which students will register for Latin and Greek. All students whose stage of achievement is not represented below are urgently invited to confer with the head of the department.

- Students offering 0 or 1 unit of Latin will register for course 1.
Students offering 2 units of Latin will register for course 3.

Students offering 3 units of Latin will register for course 4.

Students offering 4 units of Latin will register for course 5.

No credit will be given for less than two semester of Elementary Latin or Greek except as provided below in the course description of Latin 1, 2.

Latin

Latin 1, 2. Elementary Latin (3, 3)—First and second semesters.

(Hubbe.)

The essentials of Latin grammar, exercises in translation, composition, and connected reading. A student who has had two units of Latin in high school may register for Latin 1 for purposes of review, but not for credit; however, he may, under certain conditions, register for Latin 2 for credit with departmental permission.

Latin 3. Intermediate Latin (3)—First and second semesters. Prerequisite, Latin 1 and 2 or equivalent.

(Avery.)

Grammar review, Latin readings, and exercises in composition, followed by the reading of selections from Caesar's Commentaries on the Gallic War.

Latin 4. Intermediate Latin (3)—First and second semesters. Prerequisite, Latin 3 or equivalent.

(Avery.)

Selected orations of Cicero.

Latin 5. Vergil's Aeneid (3)—First and second semesters. Prerequisite, Latin 4 or equivalent.

(Hubbe.)

Selections from Vergil's Aeneid.

Latin 51. Horace (3)—Second semester. Prerequisite, Latin 5 or equivalent.

(Hubbe.)

Selected Odes and Epodes of Horace.

Latin 52. Livy (3)—First semester. Prerequisite, Latin 51 or equivalent.

(Avery.)

Selections from Livy's history.

Latin 61. Pliny's Letters (3)—Second semester. Prerequisite, Latin 52 or equivalent.

(Avery.)

Selected letters of Pliny the Younger.

Latin 70. Greek and Roman Mythology (3)—Second semester. Taught in English, no prerequisite.

(Avery.)

A systematic study of the divinities of ancient Greece and Rome and the classical myths concerning them.

NOTE:—This course is particularly recommended for students planning to major in Foreign Languages, English, History, the Fine Arts, and Journalism.

For Advanced Undergraduates and Graduates**Latin 101. Catullus and the Roman Elegiac Poets (3). (Hubbe.)**

Lectures and readings on Catullus as a writer of lyric, an imitator of the Alexandrians, and as a writer of elegy, and on Tibullus, Propertius, and Ovid as elegists. The reading of selected poems of the four authors. Reports.

Latin 102. Tacitus (3). (Hubbe.)

Lectures and readings on Greek and Roman historiography before Tacitus and on the author as a writer of history. The reading of selections from the *Annals* and *Histories*. Reports.

Latin 103. Roman Satire (3). (Avery.)

Lectures and readings on the origins and development of Roman satire. The reading of selections from the satires of Horace, Petronius' *Cena Trimalchionis*, and the satires of Juvenal. Reports.

Latin 104. Roman Comedy (3). (Hubbe.)

Lectures and readings on the origins and development of Roman comedy. The reading of selected plays of Plautus and Terence. Reports.

Latin 105. Lucretius (3). (Hubbe.)

Lectures and readings on Greek and Roman Epicureanism. The reading of selections from the *De rerum natura*. Reports.

For Graduates**Latin 210. Vulgar Latin Readings (3)—First and second semesters, Summer School. (Avery.)**

An intensive review of the phonology, morphology, and syntax of Classical Latin, followed by the study of the deviations of Vulgar Latin from the classical norms, with the reading of illustrative texts. The reading of selections from the *Peregrinatio ad loca sancta* and the study of divergences from classical usage therein, with special emphasis on those which anticipate subsequent developments in the Romance Languages. Reports.

Greek**Greek 1, 2. Elementary Greek (3, 3)—First and second semesters. (Hubbe.)**

The essentials of Greek grammar, exercises in translation, composition, and connected reading.

Greek 3. Intermediate Greek (3)—First semester. Prerequisite, Greek 1 and 2 or equivalent. (Avery.)

Grammar review, Greek readings, and exercises in composition, followed by the reading of selections from the *Anabasis* of Xenophon.

Greek 4. Intermediate Greek (3)—Second semester. Prerequisite, Greek 3 or equivalent. (Avery.)

Selections from the *Odyssey* of Homer. See Greek 6.

Greek 5. Herodotus (3)—First semester. Prerequisite, Greek 4 or equivalent. (Hubbe.)

Selections from Herodotus' history of the Persian Wars.

Greek 6. The New Testament (3)—Second semester. Prerequisite, Greek 3 or equivalent. Greek 6 will be substituted for Greek 4 upon demand of a sufficient number of students. (Avery.)

The study of New Testament Greek and its deviations from Classical Greek. The reading of selections from the four Gospels.

Greek 51. Euripides (3)—Second semester. Prerequisite, Greek 5 or equivalent. (Hubbe.)

Selected plays of Euripides.

Greek 52. Plato (3)—First semester. Prerequisite, Greek 51 or equivalent. (Avery.)

Selected dialogues of Plato.

COMPARATIVE LITERATURE

Professors Aldridge, Falls, Goodwyn, Harman, McManaway (P.T.), Murphy, Prahl, Zeeveld, Zucker; Associate Professors Cooley, Gravely, Manning, Mooney, Parsons, Weber; Assistant Professor Andrews.

Requirements for major include Comparative Literature 101, 102. Comparative Literature courses may be counted toward a major or minor in English when recommended by the student's major adviser.

Comp. Lit. 1. Greek Poetry (2)—First semester.

Homer's Iliad and *Odyssey*, with special emphasis on the literary form and the historical and mythological background.

Comp. Lit. 2. Later European Epic Poetry (2)—Second semester.

Virgil's *Aeneid*, Dante's *Divine Comedy*, *Nibelungenlied* and other European epics, with special emphasis on their relationship to and comparison with the Greek epic.

For Advanced Undergraduates and Graduates

Comp. Lit. 101, 102. Introductory Survey of Comparative Literature (3, 3) (Zucker.)

First semester: Survey of the background of European literature through study of Greek and Latin literature in English translations, discussing the debt of modern

literature to the ancients. Second semester: Study of medieval and modern Continental literature.

Comp. Lit. 103. The Old Testament as Literature (3)—Second semester. (Zucker.)

A study of the sources, development and literary types.

Comp. Lit. 105. Romanticism in France (3)—First semester. (Parsons)

Lectures and readings in the French romantic writers from Rousseau to Baudelaire. Texts are read in English translations.

Comp. Lit. 106. Romanticism in Germany (3)—Second semester. (Prah.)

Continuation of Comp. Lit. 105. German literature from Buerger to Heine in English translations.

Comp. Lit. 107. The Faust Legend in English and German Literature (3)—First semester. (Prah.)

A study of the Faust legend of the Middle Ages and its later treatment by Marlowe in *Dr. Faustus* and by Goethe in *Faust*.

Comp. Lit. 112. Ibsen (3)—First semester. (Zucker.)

A study of the life and chief works of Henrik Ibsen with special emphasis on his influence on the modern drama.

Comp. Lit. 114. The Greek Drama (3)—First semester. (Prah.)

The chief works of Aeschylus, Sophocles, Euripides, and Aristophanes in English translations. Emphasis on the historic background, on dramatic structure, and on the effect of the Attic drama upon the mind of the civilized world.

Comp. Lit. 125. Literature of the Middle Ages (3) (Cooley.)

Narrative, dramatic, and lyric literature of the Middle Ages; studies in translations. In addition, the following courses will count as credit in Comparative Literature.

English Language and Literature—Eng. 104; Eng. 113; Eng. 121; Eng. 129, 130; Eng. 144; Eng. 146; Eng. 155, 156; Eng. 157.

Foreign Language and Literatures—Span. 109.

Speech and Dramatic Art.—Speech 131, 132.

For Graduates

Comp. Lit. 258. Folklore in Literature (3)— (Goodwyn.)

A study of folk heroes, motifs, and ideas as they appear in the world's masterpieces.

The following courses will count as credit in Comparative Literature:

English Language and Literature—Eng. 201; Eng. 204; Eng. 206, 207; Eng. 216, 217; Eng. 227, 338.

Foreign Languages and Literatures—Ger. 204; Ger. 208.

ECONOMICS

Students in the College of Arts and Sciences may select Economics as a major field, and may also take courses in this department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

ENGLISH LANGUAGE AND LITERATURE

Professors Murphy, Aldridge, Bode, Harman, McManaway (P.T.), Zeeveld; Associate Professors Ball*, Bouvier†, Cooley, Gravely, Manning, Mooney, Ward, Weber; Assistant Professors Andrews, Coulter, Fleming (P.T.), Lutwack, Mish, Schaumann; Instructors Adams, Barnes, Beall, Birdsall, Browne, Chayes, Clendenin, Cowen (P.T.), Demaree, Friedman, Harris, Hoadley, Holberg, Jellema, Kissane, Martin, Meserole, Miller, Portz, Rice, Robinson, Ryals, Ryan, Sanders, Smith, Stone, Thorberg, Walt, Weaver; Junior Instructor Clubb; Lecturers Brantley, Walker; Graduate Assistants Cohen, Field, Merkel, Naething, Nelson.

Eng. 1, 2. Composition and American Literature (3, 3)—First and second semesters. Summer School. Required of freshmen. Eng. 1 is the prerequisite of Eng. 2. See Eng. 21. (Gravely and Staff.)

Grammar, rhetoric, and the mechanics of writing; frequent themes. Readings are in American literature.

Eng. 3, 4. Composition and World Literature (3, 3)—First and second semesters. Summer School. Prerequisite, Eng. 2 or 21. Eng. 3, 4, or Eng. 5, 6, or an acceptable combination of the two, are required of sophomores. Credit will not be given for more than six hours of work in 3, 4 and 5, 6.

(Cooley and Staff.)

Practice in composition. An introduction to world literature, foreign classics being read in translation.

Eng. 5, 6. Composition and English Literature (3, 3)—First and second semesters. Prerequisite, Eng. 2 or 21. Eng. 3, 4, or Eng. 5, 6, or an acceptable combination of the two, are required of sophomores. Credit will not be given for more than six hours of work in 3, 4 and 5, 6. (Cooley and Staff.)

Practice in composition. An introduction to major English writers.

*On leave to CSCS, Overseas Program, 1955-57.

†From CSCS, Overseas Program, 1956-57.

Eng. 7. Technical Writing (2)—First and second semesters. Prerequisite, Eng. 2 or 21. (Coulter and Walt.)

For students desiring practice in writing reports, technical essays, or popular essays on technical subjects.

Eng. 8. College Grammar (3)—First and second semesters. Summer School (2). Prerequisite, Eng. 2 or 21. (Harman.)

An analytical study of Modern English grammar.

Eng. 9. Introduction to Narrative Literature (3)—Second semester. Summer School (2). Prerequisite, Eng. 2 or 21.

An intensive study of representative stories, with lectures on the history and technique of the short story and other narrative forms.

Eng. 12. Introduction to Creative Writing (2)—Second semester. Prerequisite, Eng. 2 or 21. (Brantley.)

Eng. 14. Expository Writing (3)—Not offered on College Park campus. Prerequisite, Eng. 2 or 21. Credit will not be given for Eng. 7 in addition to Eng. 14.

Methods and problems of exposition; practice in several kinds of informative writing including the preparation of technical papers and reports.

Eng. 15. Readings in Biography (3)—First semester. Summer School (2). Prerequisite, Eng. 2 or 21. (Ward.)

An analytical study in the form and technique of biographical writing in Europe and America.

Eng. 21. Advanced Freshman Composition and Literature (3)—First and second semesters. Replaces the Eng. 1 and 2 requirement for students exempt from Eng. 1. (Lutwack and Staff.)

Includes a survey of fundamentals covered in Eng. 1 in addition to material comparable to that of Eng. 2.

For Graduates and Advanced Undergraduates

English 4 or 6 and junior standing are prerequisite to courses numbered 100 to 199.

Eng. 101. History of the English Language (3)—Second semester. Summer School (2). (Harman.)

Eng. 102. Old English (3)—First semester. Summer School (2). (Ball.)

Eng. 103. Beowulf (3)—Second semester. (Ball.)

Eng. 104. Chaucer (3)—First semester. Summer School (2). (Harman.)

A literary and language study of the *Canterbury Tales*, *Troilus and Criseyde*, and the principal minor poems.

Eng. 110, 111. Elizabethan and Jacobean Drama (3, 3)—Not offered in 1957-58. (Zeeveld, Mish.)

The most important dramatists of the time, other than Shakespeare.

Eng. 112. Poetry of the Renaissance (3)—First Semester. (Zeeveld.)

Eng. 113. Prose of the Renaissance (3)—Second semester. (Zeeveld, Mish.)

Eng. 115, 116. Shakespeare (3, 3)—First and second semesters. Summer School (2, 2). (Zeeveld.)

Twenty-one important plays.

Eng. 120. English Drama from 1660 to 1800 (3)—Second semester. (Ward.)

The important dramatists from Wycherley to Sheridan, with emphasis upon the comedy of manners.

Eng. 121. Milton (3)—Second semester. Summer School (2). (Murphy.)

Eng. 122. Literature of the Seventeenth Century, 1600-1660 (3)—First semester. (Murphy.)

The major non-dramatic writers (exclusive of Milton.)

Eng. 123. Literature of the Seventeenth Century, 1660-1700 (3)—Not offered in 1957-58. (Aldridge.)

The Age of Dryden, with the exception of the drama.

Eng. 125, 126. Literature of the Eighteenth Century (3, 3)—Eng. 125, Summer School (2). First and second semesters. (Aldridge.)

Eng. 129, 130. Literature of the Romantic Period (3, 3)—Summer School (2, 2). First and second semesters. (Weber.)

Eng. 134, 135. Literature of the Victorian Period (3, 3)—Not offered in 1957-58. (Cooley, Mooney.)

Eng. 139, 140. The English Novel (3, 3)—First and second semesters. Eng. 140, Summer School (2). (Ward, Mooney.)

Eng. 143. Modern Poetry (3)—First semester. Summer School (2).
(Murphy.)

The chief British and American poets of the twentieth century.

Eng. 144. Modern Drama (3)—First semester. (Weber.)

The drama from Ibsen to the present.

Eng. 145. The Modern Novel (3)—Second semester. Summer School (2).
(Andrews.)

Major English and American novelists of the twentieth century.

Eng. 148. The Literature of American Democracy (3)—Not offered in
1957-58. (Bode.)

Eng. 150. 151. American Literature (3, 3)—First and second semesters.
Summer School (2, 2). (Manning, Gravely and Lutwack.)

Representative American poetry and prose from colonial times to the present with
special emphasis on the literature of the nineteenth century.

Eng. 155, 156. Major American Writers (3, 3)—First and second se-
mesters. Summer School (2, 2). (Gravely and Manning.)

Two writers studied intensively each semester.

Eng. 157. Introduction to Folklore (3)—First semester. Summer School
(2). (Cooley.)

Historical background of folklore studies; types of folklore with particular emphasis
on folktales and folksongs, and on American folklore.

Eng. 170. Creative Writing (2)—Second semester. Prerequisite, per-
mission of the instructor. (Fleming.)

Eng. 171. Advanced Creative Writing (2)—Not offered in 1957-58. Pre-
requisite, permission of the instructor. (Fleming.)

Eng. 172. Playwriting (2)—First semester. Prerequisite, permission of
the instructor. (Fleming.)

Eng. 199. Honors Conference Course (3)—Second semester. Open only
to seniors. Prerequisite, candidacy for honors in English. (Cooley.)

A topic will be studied in selected literary works of various periods and types.
Readings; discussions; conferences; preparation of a term paper.

For Graduates

Eng. 200—Research (1-6)—Arranged. Credit in proportion to work done
and results accomplished. (Staff.)

Eng. 201. Bibliography and Methods (3)—First semester. (Mooney.)

An introduction to the principles and methods of research.

Eng. 202. Middle English (3)—Not offered in 1957-58. (Harman.)

Eng. 203. Gothic (3)—Not offered in 1957-58. (Harman.)

Eng. 204. Seminar in Medieval Literature (3)—Second semester.
(Cooley.)

Eng. 206, 207. Seminar in Renaissance Literature (3, 3)—First and second semesters. Eng. 206, Summer School (2). (McManaway, Zeeveld.)

Eng. 210. Seminar in Seventeenth-Century Literature (3)—Summer School (2). Second semester. (Murphy.)

Eng. 212, 213. Seminar in Eighteenth-Century Literature (3, 3)—Not offered in 1957-58. (Aldridge.)

Eng. 214, 215. Seminar in Nineteenth-Century Literature (3)—First and second semesters. Eng. 214, Summer School (2). (Cooley, Mooney, Weber.)

Eng. 216, 217. Literary Criticism (3, 3)—Not offered in 1957-58.
(Murphy.)

Eng. 225, 226. Seminar in American Literature (3, 3)—First and second semesters. Summer School (2, 2). (Lutwack.)

Eng. 227, 228. Problems in American Literature (3, 3)—Eng. 227, Summer School (2). First and second semesters. (Aldridge.)

FOREIGN LANGUAGES AND LITERATURES

Professors Zucker, Falls, Prah, Cunz, L. P. Smith, Goodwyn; Visiting Professor Puckett; Associate Professors Kramer, Quynn, Bingham, Parsons; Assistant Professors Schweizer, Rand, Rosenfield, Hammerschlag, Dobert, Bridgers; Instructors Nemes, Norton, Boborykine, Hall, Bulakin, Arsenault, Rovner, Lockard, James, Lee; Part-time Instructors Chen, Greenberg, Heverly.

At the beginning of each semester a placement examination is given for all students who have had some foreign language in high school and wish to do further work in that language. By this means the Department assigns each student to the suitable level of instruction. Any student who fails to qualify for the second semester of his language will be required to register for the first without credit or register for a different language. (Students who wish to continue Latin should consult the section on Classical Languages elsewhere in these pages).

No credit will be given for the elementary first semester (1) alone unless followed by further study.

Language conversation courses, 3, 8, or 9, are not to be taken to meet the college requirement of 12 hours of language unless the student has finished the second semester of second year French, German, Spanish etc. (5, 7, or 17). Taking conversation courses to meet the college requirement is permitted in the case of students who enter language courses with Advanced Standing.

A student whose native language is taught at the University may not meet the language requirement by taking Freshman or Sophomore courses in his language.

Foreign students may substitute for the 12-hour foreign language requirement 12 additional hours of English. They are advised to take **Foreign Language 1, 2, English for Foreign Students**, for their first year and **English 10, Practice in Composition**, plus a 3-hour course in literature during their second year. These courses should be taken concurrently with Freshman and Sophomore English.

Honors in French, German or Spanish: A student whose major is in French, German or Spanish and who maintains an approved average in his grades may read for honors in French, German or Spanish. A candidate for honors is examined upon an approved individual program of readings in an area of his special interest. Application may be made to the head of the Department of Foreign Languages between the second semester of the sophomore year and the first semester of the senior year.

Attention is called to the courses in **Comparative Literature** elsewhere in these pages.

Foreign Language 1, 2. English for Foreign Students (3, 3)—First and second semesters. (Bridgers.)

An introduction to English usage, adapted to the needs of the non-English-speaking student. Pronunciation, spelling, syntax; the differences between English and various other languages are stressed.

French

French 0. Intensive Elementary French (0). Summer School only. (Kramer.)

Intensive elementary course in the French language designed particularly for graduate students who wish to acquire a reading knowledge.

French 1, 2. Elementary French (3, 3)—First and second semesters. French 2, Summer School. Three recitations and one laboratory period per week. (Falls and Staff.)

Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. A student who has had two units of French in high school may take French 1 for purposes of review, but not for credit.

French 3. Elementary Conversation (1)—First and second semesters. Open to all students who have completed their first year French or French 1 with the grade A or B. (Arsenault.)

French 4, 5. Intermediate Literary French (3, 3)—First and second semesters. Summer School. Prerequisite, French 1 and 2 or equivalent. Students

who have taken French 6 and 7 cannot receive credit for French 4 and 5.
(Falls and Staff.)

Reading of texts designed to give some knowledge of French life, thought and culture.

French 6, 7. Intermediate Scientific French (3, 3)—First and second semesters. Prerequisite, French 1 and 2 or equivalent. Students who have taken French 4 and 5 cannot receive credit for French 6 and 7. (Kramer and Staff.)

Reading of technical and scientific prose, with some grammar review.

French 8, 9. Intermediate Conversation (3, 3)—First and second semesters. Prerequisite: for French 8, French 3 or consent of instructor; for French 9, French 8 or consent of instructor. (Arsenault.)

French 17. Grammar Review (3)—First and second semesters. May be taken after completion of French 4 or 5. Recommended for students who expect to major or minor in French. (Hall.)

For Advanced Undergraduates

French 51, 52. The Development of the French Novel (3, 3)—First and second semesters. (Kramer.)

Introductory study of the history and growth of the novel in French literature. French 51 covers the seventeenth and eighteenth centuries, French 52 the nineteenth.

French 53, 54. The Development of the French Drama (3, 3)—First and second semesters. (Kramer.)

Introductory study of the French drama. French 53 covers the seventeenth and eighteenth centuries, French 54 the nineteenth.

French 55, 56. The Development of the Short Story in French (3, 3)—First and second semesters. (Kramer.)

A study of the short story in French literature. French 55 covers examples up to the nineteenth century, French 56 the nineteenth and twentieth centuries.

French 61, 62. French Phonetics (1, 1)—First and second semesters. Prerequisite French 1, 2, or equivalent. (Hall.)

Elements of French phonetics, diction and intonation.

French 71, 72.—Review Grammar and Composition (3, 3)—First and second semesters. Prerequisite, French 17 or equivalent. (Quynn and Bingham.)

For students who, having a good knowledge of French, wish to become more proficient in the written and spoken language.

French 75, 76. Introduction to French Literature (3, 3)—First and second semesters. Prerequisite, second-year French or equivalent. (Falls.)

An elementary survey of the chief authors and movements in French literature.

French 80, 81. Advanced Conversation (3, 3)—First and second semesters. (Arsenault.)

For students who wish to develop fluency and confidence in speaking the language.

For Advanced Undergraduates and Graduates

French 100. French Literature of the Sixteenth Century (3)—First semester. (Falls.)

The Renaissance in France; humanism; Rabelais and Calvin; the *Pleïade*; Montaigne.

French 101, 102. French Literature of the Seventeenth Century (3, 3)—First and second semesters. (Quynn and Rosenfield.)

First semester: Descartes, Pascal, Corneille, Racine. Second semester: the remaining great classical writers, with special attention to Molière.

French 103, 104. French Literature of the Eighteenth Century (3, 3)—First and second semesters. (Falls and Bingham.)

First semester: development of the philosophical and scientific movement; Montesquieu. Second semester: Voltaire, Diderot, Rousseau.

French 105, 106. French Literature of the Nineteenth Century (3, 3)—First and second semesters. (Bingham and Quynn.)

First semester: drama and poetry from Romanticism to Symbolism. Second semester: the major prose writers of the same period.

French 107, 108. French Literature of the Twentieth Century (3, 3)—First and second semesters. (Falls.)

First semester: drama and poetry from Symbolism to the present time. Second semester: the contemporary novel.

French 121, 122. Advanced Composition (3, 3)—First and second semesters. (Falls.)

Translation from English into French, free composition, letter writing.

French 161, 162. French Civilization (3, 3)—First and second semesters. (Rosenfield and Bingham.)

French life, customs, culture, traditions. First semester: the historical development. Second semester: present-day France.

French 171. Practical French Phonetics (3)—First semester. (Smith.)

Pronunciation of modern French. The sounds and their production, the stress group, intonation.

French 199. Rapid Review of the History of French Literature (1)—Second semester. Especially designed for French majors. (Falls.)

Weekly lectures stressing the high point in the history of French literature.

For Graduates

The requirements of students will determine which courses will be offered.

French 201. Research—Credits determined by work accomplished.
(Staff.)

Guidance in the preparation of master's and doctoral theses. Conferences.

French 207, 208. The French Novel in the First Half of the Nineteenth Century (2, 2)—First and second semesters.
(Falls.)

French 209, 210. The French Novel in the Second Half of the Nineteenth Century (2, 2)—First and second semesters.
(Falls.)

French 211. Introduction to Old French (3).
(Smith.)

French 215, 216. Molière (3,3)—First and second semesters.
(Quynn.)

French 221, 222. Reading Course—(Arranged).
(Staff.)

Designed to give the graduate student a background of a survey of French literature. Extensive outside readings, with reports and periodic conferences.

French 230. Introduction to European Linguistics (3).
(Smith and Bulatkin.)

French 251, 252. Seminar (3, 3)—Required of all graduate majors in French.
(Staff.)

German

German 0. Intensive Elementary German (0). Summer School only.
(Kramer.)

Intensive elementary course in the German language designed particularly for graduate students who wish to acquire a reading knowledge.

German 1, 2. Elementary German (3, 3)—First and second semesters.
German 2, Summer School. Three recitations and one laboratory period per week.
(Cunz and Staff.)

Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. A student who has had two units of German in high school may take German 1 for purposes of review, but not for credit.

German 3. Elementary Conversation (1)—First and second semesters.
Open to all students who have completed their first year German or German 1 with grade A or B.
(Cunz.)

German 4, 5. Intermediate Literary German (3, 3)—First and second semesters. Summer School. Prerequisite, German 1, 2, or equivalent. Students who have taken German 6 and 7 cannot receive credit for German 4 and 5. (Cunz and Staff.)

Reading of narrative prose designed to give some knowledge of German life, thought and culture.

German 6, 7. Intermediate Scientific German (3, 3)—First and second semesters. Prerequisite, German 1, 2, or equivalent. Students who have taken German 4 and 5 cannot receive credit for German 6 and 7. (Kramer and Staff.)

Reading of technical and scientific prose, with some grammar review.

German 8, 9. Intermediate Conversation (3, 3)—First and second semesters. Prerequisite: for German 8, German 3 or consent of instructor; for German 9, German 8 or consent of instructor. (Cunz.)

German 17. Grammar Review (3)—First and second semesters. May be taken after completion of German 4 or 5. Recommended to students who wish to major or minor in German. (Kramer.)

For Advanced Undergraduates

German 61, 62. German Phonetics (1, 1)—First and second semesters. Prerequisite, German 1, 2, or equivalent. (Schweizer.)

Pronunciation of German, study of phonetics, oral exercises and ear training.

German 71, 72. Review Grammar and Composition (3, 3)—First and second semesters. Prerequisite, German 4, 5, or equivalent. This course is required of students preparing to teach German. (Kramer.)

A thorough study of the more detailed points of German grammar with ample practice in composition work.

German 75, 76. Introduction to German Literature (3, 3)—First and second semesters. Prerequisite, German 4, 5, or equivalent. (Schweizer.)

An elementary survey of the most outstanding authors and movements in German literature.

German 80, 81. Advanced Conversation (3, 3)—First and second semesters. Prerequisite, German 8, 9 or consent of instructor. (Dobert.)

For students who wish to develop fluency and confidence in speaking the language. Reading of German newspapers.

For Advanced Undergraduates and Graduates

German 101, 102. German Literature of the Eighteenth Century (3, 3)—First and second semesters. (Prah! and Cunz.)

The main works of Klopstock, Wieland, Lessing, Herder, Goethe, Schiller.

German 103, 104. German Literature of the Nineteenth Century (3, 3)—
First and second semesters. (Prahl and Schweizer.)

Outstanding works of Kleist, Grillparzer, Grabbe, Hebbel, Ludwig, Stifter, Keller, Anzengruber.

German 105, 106. Modern German Literature (3, 3)—First and second semesters. (Prahl and Hammerschlag.)

Prose and dramatic writings from Gerhart Hauptmann to the present time (1890-1950.)

German 107, 108. Goethe's Faust (2, 2)—First and second semesters.
 (Zucker.)

First and second parts of the drama.

German 121, 122. Advanced Composition (3, 3)—First and second semesters. (Kramer and Cunz.)

Translations from English into German, free composition, letter writing.

German 161, 162. German Civilization (3, 3)—First and second semesters. (Cunz.)

A survey of two thousand years of German history, outlining the cultural heritage of the German people, their great men, tradition, customs, art and literature, with special emphasis on the interrelationship of social and literary history.

German 199. Rapid Review of the History of German Literature (1)—
Second semester. Especially designed for German majors. (Schweizer.)

Weekly lectures stressing the leading concepts in the history of German literature.

Attention is called to Comparative Literature 106, *Romanticism in Germany*, and Comparative Literature 107, *The Faust Legend in English and German Literature*.

For Graduates

The requirements of students will determine which courses will be offered.
German 201. Research—Credits determined by work accomplished.

(Staff.)

Guidance in the preparation of master's and doctoral theses. Conferences.

German 202, 203. The Modern German Drama (3, 3)—First and second semesters. (Zucker.)

German 204. Schiller (3). (Prahl.)

German 205. Goethe's Works Outside of Faust (2). (Zucker.)

German 206. The Romantic Movement (3). (Prahl.)

German 208. The Philosophy of Goethe's Faust (3). (Zucker.)

German 221, 222. Reading Course—(Arranged). (Staff.)

Designed to give the graduate student a background of a survey of German literature. Extensive outside reading, reports and periodic conferences.

German 230. Introduction to European Linguistics (3).
(Smith and Bulatkin.)

German 231. Middle High German (3). (Schweizer.)

German 251, 252. Seminar (3, 3)—Required of all graduate majors in German. (Staff.)

Spanish

Spanish 1, 2. Elementary Spanish (3, 3)—First and second semesters.
Spanish 2, Summer School. Three recitations and one laboratory period per week.
(Parsons and Staff.)

Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. A student who has had two units of Spanish in high school may take Spanish 1 for purposes of review, but not for credit.

Spanish 3. Elementary Conversation (1)—First and second semesters.
Open to all students who have completed their first year Spanish or Spanish 1 with the grade A or B.
(Nemes.)

Spanish 4, 5. Intermediate Spanish (3, 3)—First and second semesters.
Summer School. Prerequisite, Spanish 1, 2, or equivalent. (Parsons and Staff.)

Reading of texts designed to give some knowledge of Spanish and Latin-American life, thought and culture.

Spanish 8, 9. Intermediate Conversation (3, 3)—First and second semesters.
Prerequisite: for Spanish 8, Spanish 3 or consent of instructor; for Spanish 9, Spanish 8 or consent of instructor.
(Nemes.)

Spanish 17. Grammar Review (3)—First and second semesters. May be taken after completion of Spanish 4 or 5. Recommended for students who expect to major or minor in Spanish.
(Rovner.)

For Advanced Undergraduates

Spanish 51, 52. Business Spanish (3, 3)—First and second semesters.
Prerequisite, second-year Spanish or equivalent. (Bingham.)

Designed to give a knowledge of correct Spanish usage; commercial letters.

Spanish 61, 62. Spanish Phonetics (1, 1)—First and second semesters.
Prerequisite, Spanish 1, 2, or equivalent. (Goodwyn.)

The pronunciation of Spanish, study of phonetics, oral exercises, and ear training.

Spanish 71, 72. Review Grammar and Composition (3, 3)—First and second semesters. Prerequisite, Spanish 4, 5 or equivalent. (Parsons and Rand.)

Intended to give an intensive and practical drill in Spanish composition.

Spanish 75, 76. Introduction to Spanish Literature (3, 3)—First and second semesters. Prerequisite, Spanish 4, 5, or equivalent. (Parsons and Rand.)

An elementary survey of the history of Spanish literature.

Spanish 80, 81. Advanced Conversation (3, 3)—First and second semesters. Prerequisite, Spanish 8, 9, or consent of instructor. (Nemes.)

Designed to give the student the ability to speak fluently about subjects of general interests.

For Advanced Undergraduates and Graduates

Spanish 101. Epic and Ballad (3)—First semester. (Parsons.)

The legendary and heroic matter of Spain. Readings of the *Poema del Cid* and of ballads of various cycles.

Spanish 102. The Spanish Popular Ballad (3)—Second semester. (Goodwyn.)

Typical ballads composed and developed in the Spanish-speaking world during and since the Golden Age, with stress on the folkloristic point of view.

Spanish 104. The Drama of the Golden Age (3)—First semester. (Parsons.)

Selected plays of Lope de Vega, Calderon de la Barca, Tirso de Molina and others.

Spanish 108. Lope de Vega (3)—First semester. (Parsons.)

Selected plays of Lope de Vega, Calderon de la Barca, Tirso de Molina and others.

Spanish 109. Cervantes (3)—Second semester. (Rand.)

Selected works of Cervantes; plays, exemplary novels, and Don Quixote.

Spanish 110. Modern Spanish Poetry (3)—First semester. (Rand.)

Significant poems of the nineteenth and twentieth centuries.

Spanish 111. The Spanish Novel of the Nineteenth Century (3)—First semester. (Parsons.)

Readings of some of the significant novels of the nineteenth century.

Spanish 112. Modern Spanish Drama (3)—Second semester. (Nemes.)

Significant plays of the nineteenth and twentieth centuries.

Spanish 113. The Spanish Novel of the Twentieth Century (3)—Second semester. (Rand.)

Significant novels of the twentieth century.

Spanish 115. Modern Spanish Thought (3)—First semester. (Rand.)

The generation of 1898 and other significant and interpretative writings of the twentieth century.

Spanish 121, 122. Advanced Composition (3, 3)—First and second semesters. (Goodwyn.)

Training in self-expression in Spanish, free composition, letter writing.

Spanish 151. Spanish-American Fiction (3)—First semester. (Nemes.)

The novel and short story from the Wars of Independence to the present and their reflection of society in the republics of the Western Hemisphere.

Spanish 152. Spanish-American Poetry (3)—Second semester. (Nemes.)

Representative poetry after 1800 and its relation to European trends and writers.

Spanish 153. Spanish-American Essay (3)—First and second semesters. (Nemes.)

Social and political thought from Bolivar to Vasconcelos and its relationship to social and political conditions in Spanish America.

Spanish 161, 162. Spanish Civilization (3, 3)—First and second semesters. (Rand.)

Introductory study of the literary, educational, artistic traditions; great men, customs, and general culture.

Spanish 163, 164. Latin-American Civilization (3, 3)—First and second semesters. (Goodwyn.)

Introductory study of the cultures of Latin America: the historical-political background and the dominating concepts in the lives of the people.

Spanish 199. Rapid Review of the History of Spanish Literature (1)—Second semester. Especially designed for Spanish majors. (Parsons.)

Weekly lectures stressing the leading concepts in the history of Spanish literature.

For Graduates

The requirements of students will determine which courses will be offered.

Spanish 201. Research—Credits determined by work accomplished. (Staff.)

Guidance in the preparation of master's and doctoral theses. Conferences.

Spanish 202. The Golden Age in Spanish Literature (3) (Goodwyn.)

Spanish 203, 204. Spanish Poetry (3, 3). (Goodwyn.)

Spanish 205, 206. Spanish Literature of the Twentieth Century (3, 3)—
(Rand.)

Spanish 211. Introduction to Old Spanish (3). (Parsons.)

Spanish 221, 222. Reading Course—(Arranged). Designed to give the graduate student a background of a survey of Spanish literature. Extensive outside readings, with reports and periodic conferences. (Staff.)

Spanish 230. Introduction to European Linguistics (3).
(Smith and Bulatkin.)

Spanish 251, 252. Seminar (3, 3)—Required of all graduate majors in Spanish. (Staff.)

Russian

Russian 1, 2. Elementary Russian (3, 3)—First and second semesters.
(Boborykine.)

Elements of grammar; pronunciation and conversation; exercises in translation.

Russian 3. Elementary Conversation (1)—First and second semesters. Open to all students who have completed their first-year Russian or Russian 1 with the grade A or B. (Boborykine.)

Russian 4, 5. Intermediate Russian (3, 3)—First and second semesters. Prerequisite, Russian 1 and 2, or equivalent. (Boborykine.)

Reading of texts designed to give some knowledge of Russian life, thought and culture.

Russian 8, 9. Intermediate Conversation (3, 3)—First and second semesters. Prerequisite: for Russian 8, Russian 3 or consent of instructor; for Russian 9, Russian 8 or consent of instructor. (Boborykine.)

Russian 10, 11. Scientific Russian (3, 3)—Prerequisites, Russian 4 and 5 or equivalent. (Boborykine.)

Russian 71, 72. Review Grammar and Composition (3, 3)—First and second semesters. Prerequisite, first and second-year Russian. (Boborykine.)

Designed to give a thorough training in the structure of the language; drill in Russian composition.

Russian 75, 76. Introduction to Russian Literature (3, 3)—First and second semesters. Prerequisite, second-year Russian or equivalent. (Boborykine.)

An elementary survey of Russian literature.

Russian 80, 81. Advanced Conversation (3, 3)—First and second semesters. Prerequisite, Russian 8, 9, or consent of instructor. (Boborykine)

For students who wish to develop fluency and confidence in speaking the language.

For Advanced Undergraduates and Graduates

Russian 101, 102. Modern Russian Literature (3, 3)—First and second semesters. (Boborykine.)

Works of Maxim Gorky, Alexei Tolstoy, P. Romanov, M. Zoshchenko, M. Sholokhov.

Russian 103, 104. Russian Literature of the Nineteenth Century (3, 3)—First and second semesters. (Boborykine.)

Selected writings of Pushkin, Gogol, Lermantov, Turgenev, Dostoevsky, Leo Tolstoy, Chekhov.

Hebrew

Hebrew 1, 2. Elementary Hebrew (3, 3)—First and second semesters. (Greenberg.)

Elements of grammar; pronunciation and conversation; exercises in translation.

Hebrew 3. Elementary Conversation (1)—First semester. Prerequisite, Hebrew 1 and consent of instructor. (Greenberg.)

Hebrew 4, 5. Intermediate Hebrew (3, 3)—First and second semesters. Prerequisite, Hebrew 1 and 2 or equivalent. (Greenberg.)

Texts designed to give some knowledge of Hebrew life, thought, and culture.

Hebrew 8, 9. Intermediate Conversation (3, 3)—First and second semesters. Prerequisite: for Hebrew 8, Hebrew 3 or consent of instructor; for Hebrew 9, Hebrew 8 or consent of instructor. (Greenberg.)

An intermediate practice course in spoken Hebrew.

Hebrew 75, 76. Introduction to Hebrew Literature (3, 3)—First and second semesters. Prerequisite, second-year Hebrew or equivalent. (Greenberg.)

Hebrew 101. The Hebrew Bible. (3) (Greenberg.)

Reading of selected portions of the Pentateuch.

Hebrew 102. The Hebrew Bible. (3) (Greenberg.)

Reading of selected portions of the Prophets.

Hebrew 103. Modern Hebrew Literature. (3) (Greenberg.)

The period of the Haskalah (Enlightenment).

Hebrew 104. Modern Hebrew Literature. (3)**(Greenberg.)**

The period of the Tehiah (Modern Revival).

Chinese

Chinese, 1, 2. Elementary Chinese (3, 3)—First and second semesters. Three recitations and one laboratory period per week. **(Chen.)**

Elements of pronunciation, simple ideograms, colloquial conversation, translation.

Chinese 4, 5. Intermediate Chinese (3, 3)—First and second semesters. Prerequisite, Chinese 1 and 2 or equivalent. **(Chen.)**

Reading of texts designed to give some knowledge of Chinese life, thought, and culture.

Chinese 161, 162. Chinese Civilization (3, 3)—First and second semesters. **(Chen.)**

This course supplements Geography 134 and 135, *Cultural Geography of East Asia*. It deals with Chinese literature, art, folklore, history, government, and great men. Second semester: Developments in China since 1911. (Given every other year, rotating with Geography 134 and 135.)

Chinese 161 and 162 may be counted as history credits in meeting major and minor requirements, and, along with Chinese 1 and 2, as meeting the 12-hour language requirement.

Japanese

Japanese 1, 2. Elementary Japanese (3, 3)—To be offered in the Far East only.

Elements of grammar; pronunciation and conversation; exercises in composition and translation.

Japanese 4, 5. Intermediate Japanese (3, 3)—To be offered in the Far East only.

Reading of narrative prose designed to give some knowledge of Japanese life, thought and culture.

Japanese 161, 162. Japanese Civilization (3, 3)—To be offered in the Far East only.

Japanese life, customs, culture, traditions.

Italian

Italian 1, 2. Elementary Italian (3, 3)—Not offered on the College Park campus.

Elements of grammar; pronunciation; exercises in translation.

Italian 3. Elementary Conversation (1)—Not offered on the College Park campus.

Italian 161, 162. Italian Life and Customs (3, 3)—Not offered on the College Park campus.

An introductory study of the Italian people against a background of political and social history. A survey of Italian literary and cultural traditions.

Arabic 1, 2. Modern Arabic (3, 3)—To be offered in the European Program only; for American personnel stationed in Saudi-Arabia and other Near East posts.

Modern Greek

Mod. Greek 1, 2. Spoken Modern Greek (3, 3)—Not offered on the College Park campus.

An intensive course in the colloquial style of Athens with emphasis on the vocabulary of everyday situations and including an introduction to Greek writing.

Mod. Greek 3. Elementary Conversation (1)—Not offered on the College Park Campus.

Mod. Greek 4, 5. Intermediate Greek (3, 3)—Not offered on the College Park Campus.

Literary texts and newspapers in Modern Greek.

GEOGRAPHY

Students in the College of Arts and Sciences may select Geography as a major field, and may also take courses in this department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

GEOLOGY

Irwin C. Brown, Lecturer

Geol. 1. Geology (3)—Prerequisite, Chem. 1, 3.

A study dealing primarily with the principles of dynamical and structural geology. Designed to give a general survey of the rocks and minerals composing the earth; the movement within it; and its surface features and the agents that form them.

Geol. 2. Engineering Geology (2).

The fundamentals of geology with engineering applications.

GOVERNMENT AND POLITICS

Students in the College of Arts and Sciences may select Government and Politics as a major field, and may also take courses in this department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

HISTORY

Professors Gewehr, Chatelain, Merrill, Prange, Wellborn; Associate Professors Bauer, Gordon; Assistant Professors Crosman, Davidson, Jashemski, Sparks, Stromberg; Instructors Bates, Beard, Callcott, Catton, Evans, Hirst, LesCallette, Parmer, Riddleberger, White.

H. 1, 2. History of Modern Europe (3, 3)—First and second semesters. The basic course, prerequisite for all advanced courses in European History. H. 2 may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. (Parmer and Staff.)

A study of European History from the Renaissance to the present day. First semester to 1815. Second semester since 1815.

H. 5, 6. History of American Civilization (3, 3)—Required of all students who entered the university after 1944-45. Normally to be taken in the Sophomore year. (Riddleberger and Staff.)

An historical survey of the main forces in American life with emphasis upon the development of our democratic heritage. First semester from the colonial period through the Civil War. Second semester, since the Civil War.

H. 51, 52. The Humanities (3, 3)—First and second semesters. Either of these courses may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. (Jashemski.)

In surveying history from prehistoric times to the present, man's cultural development is emphasized. The course is a study of the achievements of the various civilizations which have contributed to the common cultural heritage of western civilization. It is designed as an introductory course in history which will make a more direct contribution to the other liberal art fields. First semester to the Renaissance. Second semester since the Renaissance.

H. 53, 54. History of England and Great Britain (3, 3)—First and second semesters. (Gordon.)

A history of the development of British life and institutions. Open to all classes. Especially recommended for English majors and minors. First semester to 1485. Second semester, since 1485.

H. 56. American Life and Thought (3)—First and second semesters. Required of all students who qualify by examination for exemption from H. 5, 6. Normally to be taken in Sophomore year. (Beard and Staff.)

A survey of significant historical trends and selected problems in the development of American Civilization from the colonial era to recent times.

For Graduates and Advanced Undergraduates

A. American History

H. 101. American Colonial History (3)—First semester. Summer School (2). Prerequisites, H. 5, 6, or the equivalent. (Bates.)

The settlement and development of colonial America to the middle of the eighteenth century.

H. 102. The American Revolution (3)—Second semester. Summer School (2). Prerequisites, H. 5, 6, or the equivalent. (Bates.)

The background and course of the American Revolution through the formation of the Constitution.

H. 105. Social and Economic History of the United States to 1865 (3)—First semester. Prerequisites, H. 5, 6, or the equivalent. (Chatelain.)

A synthesis of American life from independence through the Civil War.

H. 106. Social and Economic History of the United States since the Civil War (3)—Second semester. Prerequisites, H. 5, 6, or the equivalent. (Chatelain.)

The development of American life and institutions, with emphasis upon the period since 1876.

H. 114. The Middle Period of American History 1800-1860 (3)—First semester. Summer School (2). Prerequisites, H. 5, 6, or the equivalent.
(Sparks.)

An examination of the political history of the U. S. from Jefferson to Lincoln with particular emphasis on the factors producing Jacksonian democracy, Manifest Destiny, the Whig Party, the anti-slavery movement, the Republican Party, and secession.

H. 115. The Old South (3)—First semester. Summer School (2). Prerequisites, H. 5, 6, or the equivalent.
(Riddleberger.)

A study of the institutional and cultural life of the ante-bellum South with particular reference to the background of the Civil War.

H. 116. The Civil War (3)—Second semester. Summer School (2). Prerequisites, H. 5, 6, or the equivalent.
(Sparks.)

Military aspects; problems of the Confederacy; political, social, and economic effects of the war upon American society.

H. 117. The New South (3)—First semester. Summer School (2). Prerequisites H. 5, 6, or the equivalent.
(Riddleberger.)

The South's place in the Nation from Appomattox to the present with special reference to regional problems and aspirations.

H. 118, 119. Recent American History (3, 3)—First and second semesters. Summer School (2, 2). Prerequisites, H. 5, 6, or the equivalent.
(Merrill.)

Party politics, domestic issues, foreign relations of the United States since 1890. First semester, through World War I. Second semester, since World War I.

H. 121. History of the American Frontier (3)—First semester, Summer School (2). Prerequisites, H. 5, 6, or the equivalent.
(Gewehr.)

The Trans-Allegheny West. The westward movement into the Mississippi Valley.

H. 122. History of the American Frontier (3)—Second semester, Summer School (2). Prerequisites, H. 5, 6, or the equivalent.
(Gewehr.)

The Trans-Mississippi West. Forces and factors in the settlement and development of the Trans-Mississippi West to about 1900.

H. 123. The New West (3)—Second semester. Summer School (2). Prerequisites H. 5, 6, or the equivalent.
(Bates.)

Regional peculiarities and national significance of the Plains and Pacific Coast areas from 1890 to the present.

H. 124. Reconstruction and the New Nation 1865-1896 (3)—Second semester. Summer School (2). Prerequisites H. 5, 6, or the equivalent.
(Merrill.)

Problems of reconstruction in both South and North. Emergence of Big Business and industrial combinations. Problems of the farmer and laborer.

H. 127, 128. Diplomatic History of the United States (3, 3)—First and second semesters. Prerequisites, H. 5, 6, or the equivalent. (Wellborn.)

An historical study of the diplomatic negotiations and foreign relations of the United States. First semester, from the Revolution to the Civil War; second semester, from the Civil War to the present.

H. 129. The United States and World Affairs (3)—Summer School (2). Prerequisites, H. 5, 6, or the equivalent. (Wellborn.)

A consideration of the changed position of the United States with reference to the rest of the world since 1917.

H. 133, 134. The History of Ideas in America (3, 3)—First and second semesters. Summer School (2, 2). Prerequisites, H. 5, 6, or the equivalent. (Beard.)

An intellectual history of the American people, embracing such topics as liberty, democracy, and social ideas.

H. 135, 136. Constitutional History of the United States (3, 3)—First and second semesters. Prerequisites, H. 5, 6, or the equivalent. (Gewehr.)

A study of the historical forces resulting in the formation of the Constitution, and the development of American constitutionalism in theory and practice thereafter.

Amer. Civ. 137, 138. Conference Course in American Civilization (3, 3)—First and second semesters. (Bode.)

The student's acquaintance with American Civilization is brought to a focus through the analytical study of eight to ten important books, such as Tocqueville, *Democracy in America*, Hawthorne, *The Scarlet Letter*, Veblen, *The Theory of the Leisure Class*, and Myrdal, *An American Dilemma*. Specialists from related departments participate in the conduct of the course.

H. 141, 142. History of Maryland (3, 3)—First and second semesters. Prerequisites, H. 5, 6, or the equivalent. (Chatelain.)

First semester, a survey of the political, social and economic history of colonial Maryland. Second semester, Maryland's historical development and role as a state in the American Union.

H. 145, 146. Latin-American History (3, 3)—First and second semesters. H. 146, Summer School (2). Prerequisites, 6 hours of fundamental courses. (Crosman.)

A survey of the history of Latin America from colonial origins to the present, covering political, cultural economic, and social development, with special emphasis upon relations with the United States. First semester, the Colonial Period. Second semester, The Republics.

H. 147. History of Mexico (3)—First semester. (Crosman.)

The history of Mexico with special emphasis upon the independence period and upon relations between ourselves and the nearest of our Latin-American neighbors.

B. European History

- H. 151. History of the Ancient Orient and Greece (3)—First semester.** (Jashemski.)

A survey of the ancient empires of Egypt, the Near East, and Greece, with particular attention to their institutions, life, and culture.

- H. 153. History of Rome (3)—Second semester.** (Jashemski.)

A study of Roman civilization from the earliest beginnings through the Republic and down to the last centuries of the Empire.

- H. 155. Medieval Civilization (3)—First semester. Summer School (2).**
Prerequisites, H. 1, 2, or H. 53, 54, or the permission of the instructor. (Bauer.)

A survey of Medieval life, culture, and institutions from the fall of the Roman Empire to the thirteenth century.

- H. 161. The Renaissance and Reformation (3)—Second semester. Summer School (2).** Prerequisites, H. 1, 2, or 53, 54, or the permission of the instructor. (Bauer.)

The culture of the Renaissance, the Protestant revolt and Catholic reaction through the Thirty Years War.

- H. 163, 164. The Middle East (3, 3)—First and second semesters.** Prerequisites, six hours from the following groups of courses: H. 1, 2, H. 51, 52, or H. 53, 54. (Rivlin.)

A survey of the historical and institutional developments of the nations of this vital area. The Islamic Empires and their cultures; impact of the west; breakup of the Ottoman Empire and rise of nationalism; present day problems.

- H. 165. Topics from Middle Eastern History in the Nineteenth and Twentieth Centuries (3)—First semester.** Prerequisites, H. 163, 164 or the equivalent or permission of the instructor. (Rivlin.)

Conference Course for advanced undergraduate and graduate students. Lectures and special assignments, dealing with Middle Eastern institutions in the Nineteenth and Twentieth Centuries.

- H. 166. The French Revolution (2)—First semester.** (Gordon.)

The Enlightenment and the Old Regime in France; the revolutionary uprisings from 1789 to 1799.

- H. 167. Napoleonic Europe (2)—Second semester.** (Gordon.)

European Developments from the rise of Napoleon to the Congress of Vienna.

- H. 171, 172. Europe in the Nineteenth Century, 1815-1919 (3, 3)—First and second semesters.** Prerequisites, H. 1, 2, or H. 53, 54. (Bauer.)

A study of the political, economic, social, and cultural development of Europe from the Congress of Vienna to the First World War.

- H. 175, 176. Europe in the World Setting of the Twentieth Century (3, 3)—First and second semesters, Summer School (2).** Prerequisites, H. 1, 2, or H. 53, 54. (Prange.)

A study of political, economic, and cultural developments in twentieth century Europe with special emphasis on the factors involved in the two World Wars and their global impacts and significance.

H. 185, 186. History of the British Empire (3, 3)—First and second semesters. Hist. 186, Summer School (2). Prerequisite, H. 1, 2, or H. 53, 54. (Gordon.)

First semester, the development of England's Mercantilist Empire and its fall in the war for American Independence (1783); second semester, the rise of the Second British Empire and the solution of the problem of responsible self-government (1783-1867), the evolution of the British Empire into a Commonwealth of Nations, and the development and problems of the dependent Empire.

H. 187. History of Canada (3)—First semester. Summer School (2). Prerequisites, H. 1, 2, or H. 53, 54. (Gordon.)

A history of Canada, with special emphasis on the nineteenth century and upon Canadian relations with Great Britain and the United States.

H. 189. Constitutional History of Great Britain (3)—Second semester. (Gordon.)

A survey of constitutional development in England with emphasis on the real property aspects of feudalism, the growth of the common law, the development of Parliament, and the expansion of liberties of the individual.

H. 191. History of Russia (3)—First semester. Prerequisite, H. 1, 2, or the equivalent. (Bauer.)

A history of Russia from the earliest times to the present day.

H. 192. Foreign Policy of the USSR (3)—Second semester. Summer School (2). Prerequisite, H. 191. (Bauer.)

A survey of Russian foreign policy in the historical perspective, with special emphasis on the period of the USSR. Russian aims, expansion, and conflicts with the western powers of Europe, the Near and Middle East, and the Far East will be studied.

H. 193, 194. History of European Ideas in Modern Times (3, 3)—First and second semesters. Prerequisites, H. 1, 2, or H. 53, 54 or equivalent. (Stromberg.)

Beginning with a review of the basic Western intellectual traditions as a heritage from the Ancient World, the course will present selected important currents of thought from the scientific revolution of the 16th and 17th century down to the twentieth century. First semester through the eighteenth century. Second semester, nineteenth and twentieth centuries.

H. 195. The Far East (3)—First semester. Summer School (2). (Parmer.)

A survey of institutional, cultural and political aspects of the history of China and Japan and a consideration of present-day problems of the Pacific area.

H. 196. Southeast Asia (3)—Second semester. Summer School (2). Prerequisites H. 1 and 2 or H. 5 and 6. (Parmer.)

The political, economic and cultural history of the new nations of Southeast Asia with emphasis on the colonial period and a view to understanding contemporary developments.

H. 199. Proseminar in Historical Writing (3)—First and second semesters. (Bauer, Stromberg, Riddleberger.)

Discussions and term papers designed to acquaint the student with the methods and problems of research and presentation. The students will be encouraged to examine those phases of history in which they are most interested. Required of history majors in senior year.

For Graduates

H. 200. Research (3-6)—Credit proportioned to amount of work. Arranged. Required of all candidates for degrees. (Staff.)

H. 201. Seminar in American History (3)—First and second semester. Summer School (2). (Staff.)

H. 202. Historical Literature (3)—First and second semesters, Summer School (2). (Staff.)

Assignments in various selected fields of historical literature and bibliography to meet the requirements of qualified graduate students who need more intensive concentration.

H. 205, 206. Topics in American Economic and Social History (3, 3)—First and second semesters. (Chatelain.)

Readings and conferences on the critical and source materials explaining our social and economic evolution.

H. 208. Topics in Recent American History (3)—First and second semesters. (Merrill.)

Selected readings, research, and conferences on important topics in United States History from 1900 to the present.

H. 211. The Colonial Period in American History (3)—First semester. (Ferguson.)

Readings and conferences designed to familiarize the student with some of the sources and the classical literature of American Colonial History.

H. 212. Period of the American Revolution (3)—Second semester. (Ferguson.)

Readings and conferences designed to familiarize the student with some of the critical literature and sources of the period of the American Revolution.

H. 215. The Old South (3) (Riddleberger.)

Readings and conferences designed to familiarize the student with some of the standard sources and the classical literature of the ante-bellum South.

H. 216. The American Civil War (3) (Sparks.)

Readings and conferences on the controversial literature of the Civil War. Attention is focused upon the conflicting interpretations and upon the social and economic impact of the war on American society. Opportunity is also given to read in the rich source material of this period.

H. 217. Reconstruction and Its Aftermath (3) (Merrill.)

A seminar on problems resulting from the Civil War. Political, social and economic reconstruction in South and North; projection of certain post-war attitudes and problems into the present.

H. 221, 222. History of the West (3, 3)—First and second semesters. Summer School (2, 2). (Gewehr.)

Readings and conferences designed to give the student an acquaintance with some of the more important sources and some of the most significant literature of the advancing American frontier.

H. 233, 234. Topics in American Intellectual History (3, 3) (Beard.)

Readings and conferences on selected phases of American thought, with emphasis on religious traditions, social and political theory, and development of American ideas.

H. 245. Topics in Latin American History (3)—Selected readings, research, and conferences on important topics in Latin American History. (Crosman.)**H. 250. Seminar in European History (3)—First and second semesters. Summer School (2). (Bauer.)****H. 251. Topics in Greek Civilization (3)—Readings and conferences designed to acquaint the students with selected topics and sources in Greek and Hellenistic history. (Jashemski.)****H. 253. Topics in Roman History (3)—Readings and conferences designed to acquaint the student with selected topics and sources in Roman history. (Jashemski.)****H. 255. Medieval Culture and Society (3) (Jashemski.)**

Readings and conferences designed to acquaint the student with the important literature and interpretations on such topics as feudalism, the medieval Church, schools and universities, Latin and vernacular literature, art and architecture.

H. 265. Problems in Diplomatic History of the Middle East (3)—Second semester. Prerequisites, H. 163, 164 or H. 165 or the equivalent. (Rivlin.)

Studies involving the international relations of the Middle East. A knowledge of French and/or another foreign language is required or permission of the instructor.

H. 282. Problems in the History of World War II (3)—Investigation of various aspects of the Second World War, including military operations, diplomatic phases, and political and economic problems of the war and its aftermath. (Prange.)**H. 285, 286. Topics in the History of Modern England and Greater Britain (3, 3). (Gordon.)**

Readings and conferences on the documentary and literary materials dealing with the transformation of England and the growth and evolution of the British Empire since 1763.

H. 287. Historiography (3)—First and second semesters. (Sparks.)

Readings and occasional lectures on the historical writing, the evolution of critical standards, the rise of auxiliary sciences, and the works of selected masters. The work of the course includes field trips to the Library of Congress and the National Archives. Required of all candidates for advanced degrees.

LIBRARY SCIENCE

Professor Rovelstad; Assistant Professors Turner and Urban; Instructors Baehr, Carper, Hayes, Phillips, Pierson, and Wedemeyer.

L. S. 1, 2. Library Methods (1, 1)—First and second semesters. (Staff.)

Library Science 1 and 2 are required of all students in general Arts and Science, Pre-Law and Pre-Nursing curriculums.

These introductory courses are intended to help students to use libraries with greater facility and effectiveness. Instruction, given in the form of lectures and practical work, is designed to interpret the library and its resources to the students. The courses consider the classification of books in libraries, the card catalog, periodical literature and indexes, and certain essential reference books which will be found helpful throughout the college course and in later years.

L. S. 101S. School Library Administration (3).

The organization and maintenance of effective library service in the modern school. Planning and equipping library quarters, purpose of the library in the school, standards, instruction in the use of books and libraries, training student assistants, acquisition of materials, repair of books, publicity, exhibits, and other practical problems.

L. S. 102S. Cataloging and Classification (3).

Study and practice in classifying books and making dictionary catalog for school libraries. Study of simplified forms as used in the Children's Catalog, Standard Catalog for High School Libraries, and Wilson printed cards.

L. S. 103S. Book Selection for School Libraries (3).

Principles of book selection as applied to school libraries. Practice in the effective use of book selection aids in the preparation of book lists. Evaluating of publishers, editions, translations, format, etc.

L. S. 104S. Reference and Bibliography for School Libraries (4).

Evaluation, selection, and use of standard tools, such as encyclopedias, dictionaries, periodical indexes, atlases, and yearbooks for school libraries. Study of bibliographical procedures and forms.

L. S. 111. Introduction to Fundamentals of Special Library Service (3).

An introductory course of library methods as applied to an organization in which the primary function of the library is bibliographic control of material pertinent to the specialized field of the organization. A course planned to train in general library methods a person who already is a specialist in some particular phase of library service.

MATHEMATICS

Professors Jackson, Martin, Stellmacher; Research Professors Diaz*, Weinstein*; Visiting Research Professors Douglass*, Riesz; Associate Professors Fullerton, Good, Ludford; Associate Research Professor Payne*; Assistant Professors Brace, Ehrlich, Greub, Rosen, G. Spencer; Assistant Research Professor Weinberger*; Lecturer Davis; Instructors Beiman, Brewster, Brown, Correl, Esser, Fadnis, Holmann, Hsu, Kearney, MacCarthy, McClay, Paley, Raleigh, Shepherd, Zemel; Instructor part-time Lepson; Junior Instructors Burda, Dyer, Henney; Junior Instructors part-time Anderson, Andreasen, Bauer, Bond, Carrell, Coover, Dempsey, Diggs, Evcimen, Fisher, Fuhrmann, Hart, Hill, Hopkins, Koo, Lacy, Lamanski, Maholtz, McNelis, Milans, Schirr-macher, Shirk, Sorensen, C. Spencer, Steely, Tibery, Vars, Wiley, Wilson, Woodburn.

The Mathematics Department Colloquium meets frequently throughout the academic year for reports on current research by the resident staff, visiting lecturers, and graduate students. In addition the Institute for Fluid Dynamics and Applied Mathematics Colloquium meets at frequent intervals for reports on research in those fields. All colloquium meetings are open to the public.

The local chapter of Pi Mu Epsilon, national honorary mathematics fraternity, under the guidance of the faculty advisor, Dr. MacCarthy, meets regularly for the discussion of mathematical topics of interest to the undergraduate. The programs are open to the public.

The following courses are open to students who offer at least one unit of algebra for entrance: Math. 1, 5, or 10.

The following course is open to students who offer two or more units of algebra for entrance: Math. 18.

Students are enrolled in Math. 5, 10, or 18 provided they pass the Mathematics section of the general classification test given to incoming students during registration. Students who fail this test should enroll in Math. 0 if their curriculum calls for Math. 5 or 10, and in Math. 1 if their curriculum calls for Math. 18.

In general students should enroll in only one of the course sequences, Math. 5, 10-11, 18-19, and former 15-14-17. In case this rule is not followed, proper assignment of credit will be made upon application to the Department of Mathematics. The following are listed as typical situations:

Math. 5, 10, 18. Credit in only one course: the one enrolled in latest.

Math. 11, 18. Math. 11—1 credit; Math. 18—5 credits.

The department strongly recommends that a student who receives a grade of D in a course in mathematics repeat the course to raise his grade before going on to a more advanced course.

Math. 0. Basic Mathematics (0)—First and second semesters. Required of students whose curriculum calls for Math. 5 or 10 and who fail the qualify-

*Member of the Institute for Fluid Dynamics and Applied Mathematics.

ing examination for these courses.

(Ehrlich and Staff.)

The fundamental principles of algebra. Special fee \$30.

Math. 1. Introductory Algebra (0)—First and second semesters. Prerequisite, one unit of algebra. Required of students whose curriculum calls for Math. 18 and who fail the qualifying examination for this course.

(Ehrlich and Staff.)

A review of the topics covered in a second course in algebra. Special fee \$30.

Math. 2. Solid Geometry (0)—First and second semesters. Prerequisite, one unit each of algebra and plane geometry. Open to students who enter deficient in solid geometry. Students in the College of Education may be granted two credits for Math. 2.

(Brewster and Staff.)

Lines, planes, cylinders, cones, the sphere and polyhedra, primary emphasis on mensuration. Intended for engineers and science students.

Math. 3. Fundamentals of Mathematics (4)—First and second semesters.

(Ehrlich and Staff.)

This course is open to all students and is designed to give an introduction to mathematical thinking. Content: logical structure for several elementary mathematical systems, historical advances in typical phases of mathematics and their role in world development, famous unsolvable problems, currently unsolved problems, applications of mathematics to other fields of learning.

Math. 5. Business Algebra (3)—First and second semesters. Summer School. Prerequisite, one unit of algebra. Open only to students in the College of Business and Public Administration, the College of Agriculture, the College of Military Science, and the Department of Industrial Education. Note regulation above in case student enrolls in more than one of the courses, Math. 5, 10, 18.

(Shepherd and Staff.)

Fundamental operations, fractions, ratio and proportion, linear equations, exponents, logarithms, percentage, trade discount, simple interest, bank discount, true discount, and promissory notes.

Math. 6. Mathematics of Finance (3)—First and second semesters. Summer School. Prerequisite, Math 5 or equivalent. Required of students in the College of Business and Public Administration, and open to students in the College of Arts and Sciences only for elective credit.

(Shepherd and Staff.)

Line diagrams, compound interest, simple interest, ordinary annuities, general annuities, deferred annuities, annuities due, perpetuities, evaluation of bonds, amortization, and sinking funds.

Math. 10. Algebra (3)—First and second semesters. Summer School. Prerequisite, one unit each of algebra and plane geometry. Open to biological, premedical, pre dental, and general Arts and Sciences students. Note regulation above, in case student enrolls in more than one of the courses, Math. 5, 10, 18.

(Ehrlich and Staff.)

Fundamental operations, factoring, fractions, linear equations, exponents and radicals, quadratic equations, progressions, logarithms, permutations and combinations, probability, mathematics of investment.

Math. 11. Trigonometry and Analytic Geometry (3)—First and second semesters. Summer School. Prerequisite, Math. 10 or equivalent. Open to biological, premedical, pre dental, and general Arts and Sciences students. This course is not recommended for students planning to enroll in Math. 20. Note regulation above, in case student enrolls in more than one sequence, Math. 10-11, 18-19. (Ehrlich and Staff.)

Trigonometric functions, identities, addition formulas, solution of triangles, coordinates, locus problems, the straight line and circle, conic sections, graphs.

Math. 13. Elements of Mathematical Statistics (3)—Second semester. Prerequisite, Math. 10 or equivalent. (Hsu.)

Frequency distributions, averages, moments, measures of dispersion, the normal curve, curve fitting, regression and correlation.

Math. 18, 19. Elementary Mathematical Analysis (5, 5)—First and second semesters. Summer School. Prerequisites, high school algebra completed and plane geometry. Open to students in the physical sciences, engineering, education. Note regulation above, in case student enrolls in more than one of the course sequences, Math. 5, 10-11, 18-19. (Rosen and Staff.)

The elementary mathematical functions, composed of algebraic, exponential, trigonometric types and their inverses, are studied by means of their properties, their graphical representations, the identities interconnecting them, the solution of equations involving them. The beginning techniques of calculus and a full discussion of solid analytic geometry are included. Other material may be selected from such topics as permutations, combinations, probability, statistics, determinants, vectors, and matrices.

Math. 20, 21. Calculus (4, 4)—Three lectures and two one-hour drill periods a week, first and second semesters. Summer School. Prerequisite, Math. 19 or equivalent. Open to students in engineering, education, and the physical sciences. (Rosen and Staff.)

Limits, derivatives, differentials, maxima and minima, curve sketching, rates, curvature, kinematics, integration with geometric and physical applications, partial derivatives, space geometry, multiple integrals, infinite series.

Math. 64. Differential Equations for Engineers (3)—First and second semesters. Summer School. Prerequisite, Math. 21 or equivalent. Required of students in mechanical and electrical engineering. (Ludford and Staff.)

Differential equations of the first and second order with emphasis on their engineering applications.

A. Algebra

For Graduates and Advanced Undergraduates

Math. 100. Higher Algebra (3)—First semester. Prerequisite, Math. 21 or equivalent. (Martin.)

The algebra of vector spaces and matrices, with emphasis upon those aspects of interest to students in applied mathematics.

Math. 103, 104. Introduction to Modern Algebra (3, 3)—Prerequisite, Math. 21 or equivalent. For Math. 104, the usual prerequisite of Math. 103 may be waived upon consent of instructor. (Ehrlich.)

In Math. 103 are studied the basic concepts of abstract algebra: integral domains, divisibility, congruences; fields, ordered fields; the fields of rational numbers, of real numbers, of complex numbers; polynomial domains over a field, including classical results on the theory of polynomial equations with rational, real, or complex coefficients; unique factorization domains, irreducibility criteria; rings. In Math. 104 are studied groups, vector spaces, linear transformations, matrices.

Math. 106. Introduction to the Theory of Numbers (3)—Second semester. Prerequisite, Math. 21 or equivalent. (Good.)

Integers, divisibility, Euclid's algorithm, Diophantine equations, prime numbers, Moebius function, congruences, residues.

For Graduates

Math. 200, 201. Modern Algebra (3, 3)—Prerequisite, Math. 103 or consent of instructor. (Good.)

Groups, rings, fields, algebraic numbers, Galois theory.

Math. 202. Matrix Theory (3)—Second semester. Prerequisite, Math. 103 or consent of instructor. (Ehrlich.)

The theory of vectors and matrices with applications.

Math. 204, 205. Topological Groups (3, 3)—Prerequisite, consent of instructor. (Good.)

An introductory course in abstract groups, topological spaces, and the study of collections of elements enjoying both these properties. The concept of a uniform space will be introduced and studied. The representation problem will be considered together with the subject of Lie groups.

Math. 271. Selected Topics in Algebra (3)—(Arranged.)

B. Analysis

For Graduates and Advanced Undergraduates

Math. 110, 111. Advanced Calculus (3, 3)—Prerequisite, Math. 21 or equivalent. (Fullerton.)

Limits and continuity of real and complex functions, Riemann integration, partial differentiation, line and surface integrals, infinite series, elements of vector analysis, elements of complex variable theory. Emphasis on problems and techniques.

Math. 114. Differential Equations (3)—Second semester. Prerequisite, Math. 110 or equivalent. (Martin.)

Ordinary differential equations, symbolic methods, successive approximations, solutions in series, orthogonal functions, Bessel functions, Sturmian theory.

Math. 115. Partial Differential Equations (3)—Prerequisite, Math. 114.
(Spencer.)

Partial differential equations of first and second order, characteristics, boundary value problems, systems of equations, applications.

Math. 116. Introduction to Complex Variable Theory (3)—Prerequisite, Math. 21 or equivalent. Open to students in engineering and the physical sciences. Graduate students in mathematics should enroll in Math. 286.
(Ludford.)

Fundamental operations in complex numbers, differentiation and integration, sequences and series, power series, analytic functions, conformal mapping, residue theory, special functions.

Math. 117. Fourier Series (3)—Prerequisite, Math. 114 or equivalent.
(Ludford.)

Representation of functions by series of orthogonal functions. Applications to the solution of boundary value problems of some partial differential equations of physics and engineering.

For Graduates

Math. 212. Special Functions (3)—Second semester. Prerequisite, Math. 287 or consent of instructor.
(Diaz.)

Gamma function; second order differential equations in the complex domain, regular and irregular singularities; hypergeometric functions, Riemann's P -functions, Legendre functions, confluent hypergeometric functions, Whittaker functions, Bessel functions.

Math. 215, 216. Advanced Differential Equations (3, 3)—Prerequisites, Math. 100 and 111 and 114, or consent of instructor.
(Greub.)

Existence and uniqueness theorems for systems of ordinary differential equations and for partial differential equations, characteristic theory, reduction to normal forms, the methods of finite differences.

Math. 217. Existence Theorems in Differential Equations (3)—Second semester. Prerequisite, Math. 114.
(Spencer.)

Recent results on the existence of solutions of quasi-linear systems of partial differential equations.

Math. 218. Integral Equations (3)—First semester. Prerequisites, Math. 100 and 287, or consent of instructor.
(Ludford.)

Integral equations of the first and second kind, Volterra's equation, Abel's equation and fractional differentiation; the Fredholm theory, the Hilbert-Schmidt theory, Mercer's theorem, expansion in orthonormal series; existence theorems of potential theory and other applications.

Math. 272. Selected Topics in Analysis (3)—(Arranged).

Math. 280, 281. Linear Spaces (3, 3)—Prerequisite, Math. 287 or equivalent.
(Brace.)

Linear vector spaces and their topologies, linear operations and transformations and their inverses, Banach and Hilbert spaces.

Math. 286, 287. Theory of Functions (3, 3)—Prerequisite, Math. 111 or equivalent. (Fullerton.)

Basic topics in real and complex variable theory, real and complex number systems, point sets on the line and in space, continuity, Riemann and Stieltjes integrals, Cauchy integral theorem, residues, power series, analytic functions, introduction to Lebesgue measure and integration.

Math. 288. Theory of Analytic Functions (3)—First semester. Prerequisite, Math. 287 or a course in complex variables. (Fullerton.)

Advanced topics in complex function theory, properties of power series, entire functions, conformal mapping, classification of singularities, harmonic functions.

Math. 289. Measure and Integration (3)—Second semester. Prerequisite, Math. 287 or a course in real variables. (Fullerton.)

Set functions, abstract theory of measure, differentiability properties and absolute continuity of set functions, measurable functions, abstract integration theory, introduction to linear spaces.

C. Geometry and Topology

For Graduates and Advanced Undergraduates

Math. 122, 123. Elementary Topology (3, 3)—Prerequisite, Math. 21 or equivalent. (Rosen.)

Open and closed sets, elementary topology of the straight line and the Euclidean plane, the Jordan Curve Theorem and its applications, simple connectivity.

Math. 124, 125. Introduction to Projective Geometry (3, 3)—Prerequisite, Math. 21 or equivalent. (Jackson.)

Elementary projective geometry largely from the analytic approach, projective transformations, cross ratio, harmonic division, projective coordinates, projective theory of conics, Laguerre's definition of angle.

Math. 126, 127. Introduction to Differential Geometry and Tensor Analysis (3, 3)—Prerequisite, Math. 21 or equivalent. (Jackson.)

The differential geometry of curves and surfaces with the use of vector and tensor methods, curvature and torsion, moving frames, curvilinear coordinates, the fundamental differential forms, covariant derivatives, intrinsic geometry, curves on a surface, applications to problems in dynamics, mechanics, electricity, and relativity.

Math. 128, 129. Higher Geometry (3, 3)—Prerequisite, Math. 21 or consent of instructor. Math. 128 is not a prerequisite for Math. 129. Open to students in the College of Education. (Jackson.)

This course is designed for students preparing to teach geometry in high school. The first semester is devoted to the modern geometry of the triangle, circle and sphere.

In the second semester emphasis is placed on the axiomatic development of Euclidean and non-Euclidean geometry.

For Graduates

Math. 220, 221. Differential Geometry (3, 3)—Prerequisite, Math. 111 and 152, or consent of instructor. (Jackson.)

Curves and surfaces, geometry in the large, the Gauss-Bonnet formula, surfaces of constant curvature.

Math. 223, 224. Algebraic Topology (3, 3)—Prerequisite, Math. 103 and 123, or consent of instructor. (Spencer.)

Homology, cohomology, and homotopy theory of complexes and spaces.

Math. 225, 226. Set-theoretic Topology (3, 3)—Prerequisite, Math. 123 or consent of instructor. (Greub.)

Foundations of mathematics based on a set of axioms, metric spaces, convergence and connectivity properties of point sets, continua and continuous curves, the topology of the plane.

Math. 273. Selected Topics in Geometry and Topology (3)—Arranged)

D. Probability and Statistics

For Graduates and Advanced Undergraduates

Math. 130. Probability (3)—First semester. Prerequisite, Math. 21 or equivalent. (Hsu.)

Combinatory analysis, total, compound, and inverse probability, continuous distributions, theorems of Bernoulli and Laplace, theory of errors.

Math. 132. Mathematical Statistics (3)—Second semester. Prerequisite, Math. 21 or equivalent. (Hsu.)

Frequency distributions and their parameters, multivariate analysis and correlation, theory of sampling, analysis of variance, statistical inference.

Math. 133. Advanced Statistical Analysis (3)—Second semester. Prerequisite Math. 132 or equivalent. (Hsu.)

Advanced methods in correlation analysis, regression analysis, analysis of variance, and sequential analysis, curve fitting, testing of hypotheses, non-parametric testing, machine tabulation in statistics.

E. History

For Graduates and Advanced Undergraduates

Math. 140. History of Mathematics (3)—Second semester. Prerequisite, Math. 21 or consent of instructor. (Good.)

A survey of the historical development of mathematics and of the mathematicians who have contributed to that development.

F. Mathematical Methods

For Graduates and Advanced Undergraduates

Math. 150, 151. Advanced Mathematics for Engineers and Physicists
(3, 3)—Prerequisite, Math. 21 or equivalent. (Esser.)

An introduction to advanced mathematical methods and their application to the technical problems of physics and engineering. Topics include Fourier series, matrices, ordinary and partial differential equations of applied mathematics, numerical methods, Bessel functions, complex variables, operational calculus.

Math. 152. Vector Analysis (3)—First semester. Prerequisite, Math. 21 or equivalent. (Fadnis.)

Algebra and calculus of vectors and applications.

Math. 153. Operational Calculus (3)—First semester. Prerequisite, Math. 21 or equivalent. (Martin.)

Operational solutions of ordinary and partial differential equations, Fourier and Laplace transforms.

Math. 155. Numerical Analysis (3)—First semester. Prerequisite, Math. 110 and 114, or consent of instructor. (Davis.)

A brief survey of computing machines, study of errors involved in numerical computations, the use of desk machines and tables, numerical solution of polynomial and transcendental equations, interpolation, numerical differentiation and integration, ordinary differential equations, systems of linear equations.

Math. 156. Programming for High Speed Computers (3)—Second semester. Prerequisite, Math 21 or equivalent. (Davis.)

General characteristics of high-speed automatic computers; logic of programming, preparation of flow charts, preliminary and final coding; scaling, use of floating point routines; construction and use of subroutines; use of machine for mathematical operations and for automatic coding. Each student will prepare and, if possible, run a problem on a high speed computer.

For Graduates

Math. 250. Tensor Analysis (3)—First semester. Prerequisites, Math. 100 and 152, or consent of instructor. (Ludford.)

Algebra and calculus of tensors, Riemannian geometry and its extensions, differential invariants; applications to physics and engineering, and in particular the theory of relativity.

Math. 251. Hilbert Space (3)—First semester. Prerequisites, Math. 100 and 287, or consent of instructor. (Weinstein.)

The original and general Hilbert space, scalar product, metric, strong and weak convergence, linear functionals, symmetric operators, complete continuity, eigenvalues, orthonormal systems, Schwarz-Bessel inequality and Parseval identity, eigenvalues in sub-spaces, spectral theorem.

Math. 252. Variational Methods (3)—Second semester. Prerequisite, Math. 260 or consent of instructor. (Payne.)

The Euler-Lagrange equation, minimal principles in mathematical physics, estimation of capacity, torsional rigidity and other physical quantities; symmetrisation, isoperimetric inequalities, estimation of eigenvalues; the minimax principle.

Math. 255, 256. Advanced Numerical Analysis (3, 3)—Prerequisites, Math. 100 and 155, or consent of instructor. (Davis.)

Review of numerical differentiation and integration, solution of ordinary differential equations, stability, accuracy, use of high-speed digital machines, properties of elliptic, hyperbolic and parabolic partial differential equations, conversion of partial differential equations to partial difference equations, stability and convergence of methods for solving partial difference equations, rates of convergence of relaxation methods, gradient methods, iterative methods, the method of characteristics. General methods of solving problems, existence and uniqueness theorems for difference equations associate with partial differential equations, stability of solutions, perturbation, iterative procedures, steepest descent, eigenvalue problems.

G. Mathematical Physics

For Graduates and Advanced Undergraduates

Math. 160, 161. Analytic Mechanics (3, 3)—Prerequisite, Math. 21 or equivalent. (Ludford.)

Statics, kinematics, dynamics of a particle, elementary celestial mechanics, Lagrangian equations for dynamical systems of one, two, and three degrees of freedom, Hamilton's principle, the Hamilton-Jacobi partial differential equation.

For Graduates

Math. 260. Foundations of Mathematical Physics (3)—First semester. Prerequisite, consent of instructor. (Diaz.)

General survey of mathematical methods and results employed in various branches of mathematical physics. The following are among the general topics to be discussed: vector analysis and integral identities (Green-Gauss, Stokes, etc.). ordinary and partial differential and difference equations, integral equations, formulation of typical boundary and initial value problems and indication of the main methods of solution.

Math. 261, 262. Fluid Dynamics (3, 3)—Prerequisite, Math. 260 or consent of instructor. (Ludford.)

Basic kinematic and dynamic concepts, equation of continuity, velocity potential and stream function, vorticity, Bernoulli's equation; perfect incompressible fluids, Helmholtz' vorticity theorems, plane hydrodynamics, Kutta-Joukowski theory of lift, conformal mapping, vortices and vortex streets, Prandtl-Munk theory of finite wings; viscous fluids, Navier-Stokes equations, boundary layer theory; perfect gases, method of characteristics, subsonic, transonic, and supersonic flows, hodograph method, theory of shock waves.

Math. 263, 264. Elasticity (3, 3)—Prerequisites, Math. 100 and 260, or consent of instructor. (Weinberger.)

Stress and strain, nuclei of strain, compatibility equations, Saint-Venant principle, bending, torsion and flexure of beams, complex variable methods, Airy's stress function, axial symmetry, strain energy and potential energy, buckling, bending, and vibration of plates and shells.

Math. 265. Hyperbolic Differential Equations (3)—Second semester. Pre-requisite, Math. 260 or consent of instructor. (Stellmacher.)

Two variables, Cauchy's problem, characteristics, Riemann's method, properties of the Riemann function, quasi-linear equations and canonical hyperbolic systems, wave equation in n -dimensions, methods of Hadamard and Riesz, Euler-Poisson equation and the singular problems, Huygens' principle.

Math. 266. Elliptic Differential Equations (3)—First semester. Pre-requisite, Math. 260 or consent of instructor. (Payne.)

The equations of Laplace and Poisson, flux, the theorems of Gauss and Green, potentials of volume and surface distributions, harmonic functions, Green's function and the problems of Dirichlet and Neumann; linear elliptic equations with variable coefficients, in particular the equations of Stokes and Beltrami; fundamental solutions, the principle of the maximum, and boundary value problems; introduction to the theory of non-linear equations.

Math. 274. Selected Topics in Applied Mathematics (3)—(Arranged.)

H. For Teachers of Mathematics and Science.

For Graduates and Advanced Undergraduates

Math. 181. Foundations of Number Theory (3)—Summer school. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. (Jackson.)

Axiomatic development of the real numbers. Elementary number theory.

Math. 182. Foundations of Algebra (3)—Summer school. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and of science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. (Ehrlich.)

Modern ideas in algebra and topics in the theory of equations.

Math. 183. Foundations of Geometry (3)—Summer school. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. (Jackson.)

A study of the axioms for Euclidean and non-Euclidean geometry.

Math. 184. Foundations of Analysis (3)—Summer school. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. (Spencer.)

A study of the limit concept and the calculus. (Previous knowledge of calculus is not required.)

I. Research

For Graduates and Advanced Undergraduates

Math. 190, 191. Honors Reading Course (3, 3)—Prerequisite, permission by the department to work for honors. (Staff.)

Selected reading on topics in mathematics of special interest to the student under the guidance of a staff member.

For Graduates

Math. 298. Proseminar in Research (1)—Second semester. Prerequisite, one semester of graduate work in mathematics. (Fullerton.)

A seminar devoted to the foundations of mathematics, including mathematical logic, axiom systems, and set theory.

Math. 300. Research—(Arranged).

ASTRONOMY

Astr. 1, 2. Astronomy (3, 3).

An elementary course in descriptive astronomy.

MUSIC

Professors Ulrich, Grentzer, Randall; Associate Professor Springmann;
Assistant Professors Henderson, Jordan; Instructors Bernstein,
Green, Haslup, Kemble, Meyer, Payler.

Music 1. Introduction to Music (3)—First semester. Three lectures per week. Required of all Music and Music Education majors in the first semester of the freshman year. Music 1 and Music 20 may not both be counted for credit. (Ulrich.)

A study of the forms and styles of music, leading to an intelligent appreciation of the art and providing a foundation for more advanced courses in the Department of Music.

Music 4. Men's Glee Club (1)—First and second semesters. (Haslup.)

Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters.

Music 5. Women's Chorus (1)—First and second semesters. (Payler.)

Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters.

Music 6. Orchestra (1)—First and second semesters. (Jordan.)

Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters.

Music 7, 8. Theory of Music (3, 3)—First and second semesters. Two lectures and three laboratory hours per week. (Payler.)

A fundamental course in the elements of music. Study of rhythms, scales, chord structures, and tonalities through ear training, sight singing, and keyboard drill. The student must achieve a grade of B in Music 8 in order to register for Music 17 and 70.

Music 10. Band (1)—First and second semesters. (Henderson.)

Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters.

Music 15. Chapel Choir (1)—First and second semesters. Summer School. (Springmann.)

Open to all students in the University, subject to the Director's approval. The Choir will appear at services held in the Memorial Chapel. May be taken until a total of six semester hours of credit has been earned.

Music 16. Music Fundamentals for the Classroom Teacher (3)—First and second semesters. Open to students majoring in Elementary Education or Childhood Education; other students take Music 7. Music 7 and 16 may not both be counted for credit. (Haslup.)

The fundamentals of music theory and practice, related to the needs of the classroom and kindergarten teacher, and organized in accord with the six-area concept of musical learning.

Music 17, 18. Dictation and Sight Singing (2, 2)—First and second semesters. Prerequisite: completion of Music 8 with a grade of at least B. Students whose curriculum calls for Music 17 and 18 must take these courses concurrently with Music 70 and 71, respectively. Four laboratory hours per week. (Bernstein and Staff.)

Harmonic, melodic, rhythmic, and contrapuntal dictation. Sight singing of two-, three-, and four-part music, and an introduction to clef reading.

Music 20. Survey of Music Literature (3)—First and second semesters. This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. (Ulrich and Staff.)

A study of the principles upon which music is based, and an introduction to the musical repertoires performed in America today.

Music 21, 22. Class Voice (2, 2)—First and second semesters. Beginning course. Two two-hour laboratory periods per week. (Randall.)

Fundamentals of tone production and diction, and correct breathing as applied to singing.

Music 23, 24. Class Piano (2, 2)—First and second semesters. Beginning course. Two two-hour laboratory periods per week. (Haslup.)

Fundamentals of hand position, and technical problems related to acquiring facility at the piano.

Music 70, 71. Harmony (3, 3)—First and second semesters. Prerequisite: completion of Music 8 with a grade of at least B. Students whose curriculum calls for Music 17 and 18 must take Music 17 concurrently with Music 70, and Music 18 with Music 71. Three lectures and one laboratory hour per week. (Bernstein and Staff.)

A review of music theory and a study of harmonic progressions, triads, dominant sevenths and ninths in root positions and inversions. Altered and mixed chords, modulation, enharmonic intervals. Simple harmonizations and original composition.

Music 80, 81. Class Study of Instruments (2, 2)—First and second semesters. Four laboratory hours per week. (Payler and Henderson.)

A study of the techniques of orchestral and band instruments. Practical experience on the instruments in class ensembles. Music 80, strings; Music 81, winds and percussion.

Music 120, 121. History of Music (3, 3)—First and second semesters. Prerequisites: Music 1 or 20 and junior standing. (Jordan.)

A study of musical styles from their origins in western Europe to their present-day manifestations. The interaction of music and other cultural activities. Music 120, the Greek period to Bach; Music 121, Bach to the present.

Music 141, 142. Musical Form (2, 2)—First and second semesters. Prerequisites: Music 70 and 71. (Jordan.)

A study of the organizing principles of musical composition, their interaction in musical forms, and their functions in different styles. Music 141, the phrase to the rondo; Music 142, the larger forms.

Music 143, 144. Composition (2, 2)—First and second semesters. Prerequisites: Music 70 and 71.

The principles of musical composition, and their application to the smaller forms. Original writing in nineteenth- and twentieth-century musical idioms for various media.

Music 145, 146. Counterpoint (2, 2)—First and second semesters. Prerequisites: Music 70 and 71. (Bernstein.)

A course in eighteenth-century contrapuntal techniques. Study of devices of imitation in the invention and the choral prelude. Original writing in the smaller contrapuntal forms.

Music 147, 148. Orchestration (2, 2)—First and second semesters. Prerequisites: Music 70 and 71. (Jordan.)

A study of the ranges, musical functions, and technical characteristics of the instruments, and their color possibilities in various combinations. Practical experience in orchestrating for small and large ensembles.

Music 150. Keyboard Harmony (2)—First semester. Prerequisite: Music 70 and 71. One lecture and two laboratory hours per week. (Meyer.)

The application to the piano keyboard of the harmonic principles acquired in Music 70 and 71. Harmonization of melodies, improvisation and accompanying, playing from dictation, and transposition.

Music 160, 161. Conducting (2, 2)—First and second semesters. Music 160 or the equivalent is prerequisite to Music 161. (Grentzer and Henderson.)

A laboratory course in conducting vocal and instrumental groups. Baton technique, score reading, rehearsal techniques, tone production, style, and interpretation. Music of all periods will be introduced.

Music 163. Band Techniques and Administration (2)—Second semester. Prerequisites: Music 81 and 161. Two lectures and two laboratory hours per week. (Henderson.)

Intensive study of a secondary wind instrument and of rehearsal techniques. A survey of instructional material, administrative procedures, and band pageantry will be included.

Music 166. Survey of the Opera (3)—Second semester. Prerequisite: Music 120 and 121 or the equivalent. (Randall.)

A study of the music, librettos, and composers of the standard operas.

Music 167. Symphonic Music (3)—First semester. Summer school (2). Prerequisites: Music 120 and 121 or the equivalent. (Jordan.)

The study of orchestral music from the Baroque period to the present. The concerto, symphony, overture, and other forms are examined.

Music 168. Chamber Music (3)—Second semester. Prerequisites: Music 120 and 121 or the equivalent. (Ulrich.)

The history and literature of chamber music from the early Baroque period to the present. Music for trio sonata, string quartet and quintet, and combinations of piano and string instruments is studied.

Music 169. Choral Music (3)—First semester. Prerequisite: Music 120 and 121 or the equivalent. (Payler.)

The history and literature of choral music from the Renaissance to the present, with discussion of related topics such as Gregorian chant, vocal chamber music, etc.

APPLIED MUSIC

A new student or one taking applied music for the first time at this University should register for Music X (Piano) or Music X (Violin), etc. He will receive the proper classification at the end of his first semester in the Department. Special fee of \$40.00 per semester on basic music courses.

Music 12, 13. Applied Music (2-4 hours each course)—First and second semesters. Freshman course. Two half-hour lessons and six practice hours per

week if taken for two hours credit, or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for piano majors in the B. Mus. curriculum only. (Staff.)

The student will register for Mus. 12 (Piano) or Mus. 12 (Violin), etc., if taken for two hours credit; and Mus. 12D (Piano) if taken for four hours credit. The same principle applies to Mus. 13 and Mus. 13D. Special fee of \$40.00 per semester.

Music 52, 53. Applied Music (2-4 hours each course)—First and second semesters. Sophomore course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental majors in the B.Mus. curriculum only. Prerequisite, Mus. 13 (or 13D) on the same instrument. (Staff.)

The student will register for Mus. 52 (Piano) or Mus. 52 (Violin), etc., if taken for two hours credit; and Mus. 52D (Piano) or Mus. 52D (Violin) etc., if taken for four hours credit. The same principle applies to Mus. 53 and Mus. 53D. Special fee of \$40.00 per semester.

Music 112, 113. Applied Music (2-4 hours each course)—First and second semesters. Junior course. Two half-hour lessons and six practice hours per week if taken for two hours credit, or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental or vocal majors in the B. Mus. curriculum only. Prerequisite, Mus. 53 (or 53D) on the same instrument. (Staff.)

The student will register for Mus. 112 (Piano) or Mus. 112 (Violin), etc., if taken for two hours credit; and Mus. 112D (Piano) or Mus. 112D (Violin), etc., if taken for four hours credit. The same principle applies to Mus. 113 and Mus. 113D. Special fee of \$40.00 per semester.

Music 152, 153. Applied Music (2-4 hours each course)—First and second semesters. Senior course. Two half-hour lessons and six practice hours per week if taken for two hours credit, or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental or vocal majors in the B. Mus. curriculum only. Prerequisite, Mus. 113 (or 113D) on the same instrument. (Staff.)

The student will register for Mus. 152 (Piano) or Mus. 152 (Violin), etc., if taken for two hours credit; and Mus. 152D (Piano) or Mus. 152D (Violin), etc., if taken for four hours credit. The same principle applies to Mus. 153 and Mus. 153D. Special fee of \$40.00 per semester.

PHILOSOPHY

Professor Garvin; Assistant Professors Lavine, Robinson, Schlaretzki.

Phil. 1. Philosophy for Modern Man (3)—Each semester. This course is one of a group of three courses within Elective Group I of the American Civilization Program. It may also be taken by students who qualify by tests to select substitute courses in the Program (provided the student has not taken the course as his Group I elective). (Garvin and Staff.)

Modern man's quest for understanding of himself and his world, with particular reference to American ideas and ideals.

Phil. 41. Elementary Logic and Semantics (3)—First semester.
(Schlaretzki.)

An introductory study of logic and language, intended to help the student increase his ability to employ language with understanding and to reason correctly. Topics treated include: the uses and abuses of language, techniques for making sound inferences, and the logic of science.

Phil. 52. Philosophy in Literature (3)—Second semester.
(Lavine and Schlaretzki.)

Reading and philosophical criticism of novels and dramas containing ideas significant for ethics, social policy, and religion.

Phil. 53. Philosophy of Religion (3)—Second semester. (Robinson.)

This course seeks to provide the student with the means by which he may approach intelligently the main problems of religious thought; the nature of religious experience, the forms of religious expression, the conflicting claims of religion and science, and the place of religion in the community and in the life of the individual.

For Advanced Undergraduates and Graduates

Phil. 101. Ancient Philosophy (3)—First semester. (Robinson.)

A history of Greek thought from its beginnings to the time of Justinian. The chief figures discussed: the Presocratic philosophers, Socrates, Plato, Aristotle, Epicurus, the Stoic philosophers and Plotinus.

Phil. 102. Modern Philosophy (3)—Second semester.
(Lavine and Schlaretzki.)

A history of philosophical thought in the West during the 16th, 17th, and 18th Centuries. The chief figures discussed: Bacon, Galileo, Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume and Kant.

Phil. 111. Medieval Philosophy (3)—First semester. (Robinson.)

A history of philosophical thought in the West from the close of the Classical period to the Renaissance. Based upon readings in the Stoics, early Christian writers, Neoplatonists, later Christian writers and Schoolmen.

Phil. 114. Contemporary Movements in Philosophy (3)—First semester.
(Garvin.)

A survey of recent and present developments in philosophy. Attention will be given to such thinkers as James, Bergson, Russell, Dewey, and Whitehead and to such movements as Pragmatism, Idealism, Naturalism, Positivism, and Existentialism. Particular consideration will be paid to the bearing of these developments on contemporary problems of science, religion and society.

Phil. 120. Oriental Philosophy (3)—Second semester. (Robinson.)

A brief survey of Indian and Chinese philosophy. Discussion of Indian thought will center about the Rig-Veda, the Upanishads, the Buddhist philosophers, and the chief

Hindu systems. Discussion of Chinese thought will center about Confucius, Lao-tse and their disciples, particular attention being given to the development of democratic ideals from Mencius to Sun Yat-sen.

Phil. 121. American Philosophy (3)—Second semester. (Schlaretzki.)

A survey of American philosophical thought from the 18th Century to the present. Special attention is given to Edwards, Jefferson, Emerson, Royce, Peirce, James, Dewey, and Santayana.

Phil. 123, 124. Philosophies Men Live By (2, 2)—First and second semesters. Phil. 123, extension (3). Designed as electives for students who wish to acquaint themselves with the field of philosophy. Phil. 123 not necessarily a prerequisite for Phil. 124. (Staff.)

An exploration of the fundamental beliefs which determine what men make of their lives and of the world they live in. Each semester classic statements of these beliefs by great philosophers will be chosen for class discussion on the basis of their significance for the problems confronting modern man.

Phil. 125. The Great Philosophers (3)—Offered in Baltimore only. (Staff.)

A discussion of the ideas of the great Western philosophers, based on readings in their works.

Phil. 130. The Conflict of Ideals in Western Civilization (3)—First semester. (Lavine and Schlaretzki.)

A critical and constructive philosophical examination of the assumptions, goals, and methods of contemporary democracy, fascism, socialism, and communism, with special attention to the ideological conflict between the U. S. and Russia.

Phil. 135. Philosophy of Social and Historical Change (3)—Second semester. (Lavine.)

A survey and an assessment of the religious, the philosophic, and the scientific approaches to socio-historic change, including the theories of linear progress, evolutionary progress, cyclical repetition, Hegelian-Marxian dialectic, Weberian secularization and bureaucratization.

Phil. 140. Philosophical Bases of Educational Theories (3)—Second semester. (Robinson.)

A critical study of the foundations of major views regarding the proper ends of education and the implications of these views for educational practice.

Phil. 151. Ethics (3)—Second semester. (Garvin and Schlaretzki.)

A critical study of the problems and theories of human conduct, aimed at developing such principles of ethical criticism as may be applied to contemporary personal and social problems and to the formulation of an ethical philosophy of life.

Phil. 153. Philosophy of Art (3)—Second semester. (Robinson.)

An inquiry into the nature and functions of art. The course will begin with an examination of the relations between art and imitation, art and craft, art and beauty,

art and pleasure, art and form, art and expression, art and not-art, and good, bad, and great art, and conclude with a consideration of the uses of art, propagandistic, religious, escapist, and therapeutic.

Phil. 154. Political and Social Philosophy (3)—Second semester.

(Lavine and Schlaretzki.)

An inquiry into the nature and functions of society and of the state. Attention is given to the major classical and contemporary theories, but the course is not primarily historical. The central problems: determination of the grounds of political obligation; reconciliation of the claims of personal freedom and social welfare.

Phil. 155. Logic (3)—Second semester.

(Garvin.)

A critical exposition of deductive logic. The course includes an examination and appraisal of Aristotelian logic and a systematic presentation of the foundations of modern symbolic logic. Consideration is given to the application of the techniques of logic in the organization of knowledge and in scientific method. This course does not presuppose Phil. 41, but forms a natural sequel to it.

Phil. 156. Philosophy of Science (3)—First semester.

(Lavine and Robinson.)

An inquiry into the relations of the sciences, the nature of observation, hypotheses, verification, experiment, measurement, scientific laws and theories, the basic concepts and presuppositions of science, and the relations of science to society.

Phil. 158. Philosophy of Language (3)—Second semester.

(Schlaretzki.)

An inquiry into the nature and function of language and other forms of symbolism.

Phil. 191, 192, 193, 194. Topical Investigations (1-3)—Each semester.

(Staff.)

Tutorial course. Independent study under individual guidance. Topics selected by students in conference with the department chairman. Restricted to advanced students with credit for at least 12 units of philosophy.

For Graduates

Graduate instruction in the Department of Philosophy is carried on mainly by independent investigation of special topics under individual supervision. Any of the courses listed below may be elected more than once. Course selections require the approval of the department chairman.

Phil. 201. Research in Philosophy (1-3)—Each semester.

(Staff.)

Selected projects in historical research under individual guidance.

Phil. 203. Selected Problems in Philosophy (1-3)—Each semester.

(Staff.)

Intensive study of selected topics in systematic philosophy under individual supervision.

Phil. 205. Seminar in the History of Philosophy (1-3)—First semester.
(Staff.)

A special topic will be selected for each year, e.g., Plato, Aristotle, Kant, British Empiricists, Russell.

Phil. 206. Seminar in Problems of Philosophy (1-3)—Second semester.
(Staff.)

A special topic will be selected each year, e.g., Symbolic Logic, Philosophical Analysis, Perceptual Knowledge.

PHYSICS

Professors Toll, Morgan, Myers; Visiting Professors Hund, Opik; Visiting Research Professor Ward; Part-time Professors Brickwedde, de Launay, Kennard, Wangsness; Associate Professors Anderson, Ferrell, Hornyak, Iskraut, Singer; Assistant Professors Laster, MacDonald; Assistant Research Professor Swetnick; Visiting Lecturer Visconti; Research Associates Griem, Hinnov, Homa, Maradudin.

Phys. 1. Elements of Physics: Mechanics, Heat, and Sound (3)—First semester. Three lectures a week. The first half of a survey course in general physics. *This course is for the general student and does not satisfy the requirements of the professional schools.* Prerequisite, successful passing of the qualifying examination in elementary mathematics. Lecture demonstration fee, \$3.00
(Morgan.)

Phys. 2. Elements of Physics: Magnetism, Electricity, and Optics (3)—Second semester. Three lectures a week. The second half of a survey course in general physics. *This course is for the general student and does not satisfy the requirements of the professional schools.* Prerequisite, Phys. 1. Lecture demonstration fee, \$3.00.
(Morgan.)

Phys. 10, 11. Fundamentals of Physics (4, 4)—First and second semesters. Three lectures, one recitation, and one two-hour laboratory period a week. A course in general physics treating the fields of mechanics, heat, sound, electricity, magnetism, optics, and modern physics. This course satisfies the minimum requirements of medical and dental schools. Prerequisite, entrance credit in trigonometry or Math. 11 or concurrent enrollment in Math. 18. Lecture demonstration and laboratory fee, \$10.00 per semester.

(Laster and Staff.)

Phys. 20. General Physics: Mechanics. Heat and Sound (5)—First and second semesters. Three lectures, two recitations and one two-hour laboratory period a week. The first half of a course in general physics. Required of all students in the engineering curricula. Math. 20 is to be taken concurrently. Lecture demonstration and laboratory fee, \$10.00.

(Iskraut, MacDonald, and Staff.)

Phys. 21. General Physics: Electricity, Magnetism and Optics (5)—First and second semesters. Three lectures, two recitations and one two-hour laboratory period a week. The second half of a course in general physics. Required of all students in the engineering curricula. Prerequisite, Phys. 20, Math 21 is to be taken concurrently. Lecture demonstration and laboratory fee, \$10.00. (Iskraut, MacDonald, and Staff.)

Phys. 50, 51. Intermediate Mechanics (2, 2)—First and second semesters. Two lectures a week. Prerequisite, Phys. 11, or Phys. 21. (Morgan.)

Phys. 52. Heat (3)—First semester. Three lectures a week. Prerequisite, Phys. 11 or 21. Math. 20 is to be taken concurrently. (Iskraut.)

Phys. 53. Nuclear Physics and Radioactivity (3)—Second semester. Three lectures a week. Prerequisite, Phys. 11 or Phys. 21. (Ferrell.)

Phys. 54. Sound (3)—Second semester. Three lectures a week. Prerequisite, Phys. 11 or 21. Math. 21 is to be taken concurrently. (R. Anderson.)

Phys. 60. Intermediate Physics Experiments. Three hours laboratory work for each credit hour. One or more credits may be taken concurrently. Prerequisites, Phys. 11 or 21. Laboratory fee, \$10.00 per credit hour. (Myers.)

For Advanced Undergraduates and Graduates

Phys. 100. Advanced Experiments. Three hours laboratory work for each credit hour, each semester. One or more credits may be taken concurrently. Prerequisite, Phys. 52 or 54. Laboratory fee, \$10.00 per credit hour. (Myers.)

Phys. 101. Laboratory Arts. Three hours laboratory a week for each credit hour. One or more credits may be taken concurrently. Laboratory fee, \$10.00 per credit hour. (Abe.)

Phys. 102. Optics (3)—Three lectures a week, second semester. Prerequisites, Phys. 11 or 21 and Math. 21. (Morgan.)

Phys. 103. Applied Optics (3)—Three lectures a week, first semester. Prerequisite, Phys. 102. (Morgan.)

Phys. 104, 105. Electricity and Magnetism (3, 3)—Three lectures a week, first and second semesters. Prerequisites, Phys. 11 or 21; Math. 21. (Ward.)

Phys. 106 107. Theoretical Mechanics (3, 3)—Three lectures a week, first and second semesters. Prerequisites, Phys. 51 or consent of instructor. (Imai.)

Phys. 108. Physics of Electron Tubes (3)—Three lectures a week, first

semester. Prerequisite, Phys. 104 must be taken previously or concurrently.
(Hornyak.)

Phys. 109. Electronic Circuits (4)—Four lectures a week, second semester. Prerequisite, Phys. 105 must be taken previously or concurrently.
(Hornyak.)

Phys. 110. Applied Physics Laboratory (1, 2, or 3)—Three hours laboratory work for each credit hour. One to three credits may be taken concurrently, each semester. Prerequisite, Phys. 52 or Phys. 54, and one credit in Phys. 100.
(Myers.)

Phys. 111. Physics Shop Techniques (1)—One 3 hour laboratory per week, first semester. Laboratory fee, \$10.00.
(Horn.)

Phys. 114, 115. Introduction to Biophysics. (2, 2)—Two lectures a week, first and second semesters. Prerequisites, intermediate Physics and Calculus.
(———)

Phys. 116, 117. Fundamental Hydrodynamics (3, 3)—Three lectures a week. Prerequisites, Phys. 107 and Math. 21.
(Homa.)

Phys. 118. Introduction to Modern Physics (3)—Three lectures a week, first semester. Prerequisites, Math. 21 and Phys. 11 or 12.
(Hornyak.)

Phys. 119. Modern Physics (3)—Three lectures a week, second semester. Prerequisite, Phys. 118.
(Toll.)

Phys. 120. Nuclear Physics (4)—Four lectures a week, second semester. Prerequisite, Phys. 118 or equivalent.
(Hornyak.)

Phys. 121. Neutron Physics and Fission Reactors (4)—Four lectures a week, second semester. Prerequisite, Phys. 120.
(Shapiro.)

Phys. 122. Properties of Matter (4)—Four lectures per week, first semester. Prerequisite, Phys. 118 or equivalent.
(Myers.)

Phys. 124. Introduction to Astrophysics and Geophysics (3)—Three lectures a week, first semester. Prerequisites, Phys. 118 or the consent of instructor.
(Singer.)

Phys. 126. Kinetic Theory of Gases (3)—Three lectures a week. Prerequisites, Phys. 107 and Math. 21, or equivalent.
(Kennard.)

Phys. 130, 131. Basic Concepts of Physics (2, 2)—Two lectures a week. First and second semester. Prerequisite: Junior standing. Lecture demonstration fee, \$2.00 per semester. (Laster.)

A primarily descriptive course intended mainly for those students in the liberal arts who have not had any other course in Physics. This course does not satisfy the requirements of professional schools nor serve as a prerequisite or substitute for other physics courses. The main emphasis in the course will be on the concepts of physics, their evolution and their relation to other branches of human endeavor.

Phys. 150. Special Problems in Physic. Research or special study. Credit according to work done. First and second semesters. Prerequisite, major in physics and consent of Instructor. Lab. fee, \$10.00 per credit hour when appropriate. (——.)

For Graduates

Of the courses which follow, 200, 201, 212 and 213 are given every year; all others will be given according to the demand.

Phys. 200, 201. Introduction to Theoretical Physics (5, 5)—Five lectures a week, first and second semesters. (Myers.)

Phys. 202, 203. Advanced Dynamics (2, 2)—Two lectures a week, first and second semesters. Prerequisite, Phys. 200. (Myers.)

Phys. 204. Electrodynamics (4)—Four lectures a week. Prerequisite, Phys. 201. (Iskraut.)

Phys. 206. Physical Optics (3)—Prerequisite, Phys. 201. (Myers.)

Phys. 208. Thermodynamics (3)—Three lectures per week, first semester. Prerequisite, Phys. 201 or equivalent. (Schamp.)

Phys. 210. Statistical Mechanics (3)—Two lectures a week, second semester. Prerequisites, Phys. 119 and 201. (Schamp.)

Phys. 212, 213. Introduction to Quantum Mechanics (4, 4)—Four lectures a week, first and second semesters. Prerequisite, Phys. 201. (Ferrell.)

Phys. 214. Theory of Atomic Spectra (3)—Three lectures a week, first semester. Prerequisite, Phys. 213, or consent of instructor. (Anderson, R.)

Phys. 215. Theory of Molecular Spectra (3)—Three lectures a week, second semester. Prerequisite, Phys. 214. (Anderson, R.)

Phys. 216, 217. Molecular Physics (2, 2)—Two lectures a week. Prerequisite, Phys. 213. (Jansen.)

Phys. 218, 219. X-Rays and Crystal Structure (3, 3)—Three lectures a week, first and second semesters. (Morgan.)

Phys. 220. Application of X-Ray and Electron Diffraction Methods (2)—Two laboratory periods a week. (Morgan.)

Phys. 221. Upper Atmosphere and Cosmic Ray Physics (2)—Two lectures a week, second semester. Prerequisite, Phys. 201 or consent of instructor. (Singer.)

Phys. 222, 223. Boundary-Value Problems of Theoretical Physics (2, 2)—Prerequisite, Phys. 201. (de Launay.)

Phys. 224, 225. Supersonic Aerodynamics and Compressible Flow (2, 2)—Prerequisite, Phys. 201. (Pai.)

Phys. 226, 227. Theoretical Hydrodynamics (3, 3)—Three lectures a week. Prerequisite, Phys. 201. (Burgers.)

Phys. 230. Seminar—Seminars on various topics in advanced physics are held each semester, with the contents varied each year. One semester credit for each seminar each semester. (Faculty.)

Phys. 231. Applied Physics Seminar. (One semester credit for each seminar each semester.) (Burgers.)

Phys. 232, 233. Hydromechanics Seminar (1, 1). (Kennard.)

Phys. 234, 235. Theoretical Nuclear Physics (3, 3)—Three lectures a week. Prerequisite, Phys. 213. (MacDonald.)

Phys. 236. Theory of Relativity (3)—Three lectures a week. Prerequisite, Phys. 200. (Iskraut.)

Phys. 237. Relativistic Quantum Mechanics (3)—Three lectures per week, first semester. Prerequisite, Phys. 218. (Toll, Ferrell.)

Phys. 238. Quantum Theory—Selected Topics (3)—Three lectures a week. Prerequisites, Phys. 236 and 212. (Staff.)

Phys. 239. Elementary Particles (3)—Three lectures a week, second semester. Prerequisite, Phys. 237. (Toll.)

Phys. 240, 241. Theory of Sound and Vibrations (3, 3)—Three lectures a week. Prerequisite, Phys. 201. (Snively.)

Phys. 242, 243. Theory of Solids (2, 2)—Two lectures a week, first and second semesters. Prerequisite, Phys. 213. (Montroll.)

Phys. 245. Special Topics in Applied Physics. (2 credits each semester.)
Two lectures a week. (Staff.)

Phys. 246, 247. Special Topics in Fluid Dynamics, (2, 2)—Prerequisite,
Advanced graduate standing and consent of the instructor. (Burgers.)

Phys. 248, 249. Special Topics in Modern Physics (2, 2)—Two lectures a
week. Prerequisite, Calculus and consent of instructor. (———)

Phys. 250. Research—Credit according to work done, each semester.
Laboratory fee, \$10.00 per credit hour. Prerequisite: An approved applica-
tion for admission to candidacy or special permission of the Physics Depart-
ment. (Staff.)

Phys. 262, 263. Aerophysics (3, 3)—Prerequisite, consent of instructor.
Three lectures a week. (Pai.)

Special Physics Courses for High School Science Teachers.

The courses in this section were especially designed for high school teachers and are not applicable to B.S., M.S., or Ph.D. degrees in physics without special permission of the physics department. However, these courses can be included as part of a physics minor or as electives.

Phys. 118A. Atoms, Nuclei, and Stars (3)—Three lectures per week.
(Herzfeld.)

Phys. 122A. Properties of Materials (3)—Three lectures per week
(Myers.)

Phys. 160A. Physics Problems (1, 2, 3)—Lectures and discussion sessions
arranged. (Goodwin.)

Phys. 170A. Applied Physics (3)—Three lectures per week. (Montroll.)

**Phys. 199. National Science Foundation Summer Institute for Teachers
of Science and Mathematics (1)—**Five two-hour seminars each week in the
last two weeks of Summer School. Enrollment limited to participants in the
N.S.F. Summer Institute. Laboratory fee, \$5.00. (Laster and Staff.)

PSYCHOLOGY

Professors Andrews, Cofer, Gustad, Hackman, Ross; Associate Professors
McGinnies, Solem; Assistant Professors Brush, Magoon; Instructors
Maxwell, Pumroy, Sprecher, Wegner; Lecturer Brady.

Psych. 1. Introduction to Psychology (3)—First and second semesters.
This course may be taken by students who qualify to select courses within
Elective Group II of the American Civilization Program.
(McGinnies and Staff.)

A basic introductory course, intended to bring the student into contact with the
major problems confronting psychology and the more important attempts at their solu-
tion.

Psych. 2. Applied Psychology (3)—First and second semesters. Prerequisite, Psych. 1. (Solem.)

Application of research methods to basic human problems in business and industry, in the professions, and in other practical concerns of everyday life.

Psych. 4. Problems in Modern Psychology (3)—First and second semesters. Prerequisite, Psych. 1. (Staff.)

Primarily for students in the College of Arts and Sciences who major or minor in psychology. A systematic survey of the field of psychology with particular emphasis on methodology. Consideration of individual differences, motivation, sensory and motor processes, learning, emotional behavior and personality.

Psych. 5. Mental Hygiene (3)—First and second semesters. Prerequisite, Psych. 1. (Magoon.)

Introduction to the psychology of human personality and adjustment with a view toward increasing self-understanding and developing an appreciation of the mental health movement and each individual's stake in it.

Psych. 21. Social Psychology (3)—First and second semesters. Prerequisite, Psych. 1. (McGinnies and Wegner.)

Personality and behavior as influenced by culture and interpersonal relations. Social influences on motivation, learning, memory, and perception. Attitudes, public opinion, propaganda, language and communication, leadership, ethnic differences, and group processes.

Psych. 25. Child Psychology (3)—First semester. Prerequisite, Psych. 1. (Wegner.)

Behavioral analysis of normal development and normal socialization of the growing child. Leading theories of child nature and care, and their implications.

Psych. 26. Development Psychology (3)—First semester. Prerequisite, Psych. 1. (Staff.)

Genetic approach to human motivation and accomplishment. Research on simpler animal forms, the child, the adolescent and the adult in terms of the development of normal adult behavior.

For Advanced Undergraduates and Graduates

Graduate credit will be assigned only for students certified by the Department of Psychology as qualified for graduate standing.

Psych. 106. Statistical Methods in Psychology (3)—First and second semesters. Prerequisites, Psych. 1 and Math. 1, 5, or 10 or equivalent. (Hackman and Brush.)

A basic introduction to quantitative methods used in psychological research; measures of central tendency, of spread, and of correlation. Majors in Psychology should take this course in the junior year.

Psych. 110. Educational Psychology (3)—Second semester. Prerequisite, Psych. 1 or equivalent. (Staff.)

Researches on fundamental psychological problems encountered in education. Measurement and significance of individual differences; learning, motivation, transfer of training, and the educational implications of theories of intelligence.

Psych. 122. Advanced Social Psychology (3)—Second semester. Prerequisite, Psych. 121 and consent of instructor. (McGinnies and Wegner.)

A systematic review of researches and points of view in regard to major problems in the field of social psychology.

Psych. 128. Human Motivation (3)—First and second semesters. Prerequisite, Psych. 21. (Cofer.)

Review of research literature dealing with determinants of human performance, together with consideration of the major theoretical contributions in this area.

Psych. 131. Abnormal Psychology (3)—First and second semesters. Prerequisite, three courses in Psychology. (Magoon, Pumroy.)

The nature, diagnosis, etiology, and treatment of mental disorders.

Psych. 136. Applied Experimental Psychology (3)—Second semester. Prerequisite, Psych. 1 or consent instructor. (Ross.)

A study of basic human factors involved in the design and operation of machinery and equipment. Organized for students in engineering, industrial psychology, and the biological sciences.

Psych. 140. Psychological Problems in Advertising (3)—Second semester. Prerequisite, Psych. 1. (Hackman.)

Psychological problems that arise in connection with the production and testing of advertising; techniques employed in attacking these problems through research.

Psych. 142. Techniques of Interrogation (3)—First and second semesters. Prerequisite, Psych. 121. (Hackman.)

The interview, the questionnaire, and other methods of obtaining evidence on human attitudes and reactions, as viewed in the light of modern research evidence.

Psych. 145. Introduction to Experimental Psychology (4)—First and second semester. One lecture and two two-hour laboratory periods per week. Prerequisite, Psych. 106. Laboratory fee per semester, \$4.00. (Ross and Brush.)

Primarily for students who major or minor in psychology. A systematic survey of the laboratory methods and techniques as applied to human behavior. Emphasis is placed on individual and group participation in experiments, use of data, and preparation of reports.

Psych. 148. Psychology of Learning (3)—First semester. Prerequisite, Psych. 145. (Cofer and Brush.)

Review and analysis of the major phenomena and theories of human and animal learning, including an introduction to the fields of problem solving, thinking and reasoning behavior.

Psych. 150. Tests and Measurements (3)—Second semester. Prerequisite, Psych. 106. Laboratory fee, \$4.00. (Gustad, Magoon.)

Critical survey of measuring devices used in counselling, educational and industrial practice with an emphasis on the theory, development and standardization. Laboratory practice in the administration and interpretation of a variety of commonly used tests is provided.

Psych. 161. Industrial Psychology (3)—Second semester. Prerequisite, 6 hours in Psychology. (Solem.)

A survey course, intended for those who plan to enter some phase of personnel work, but who do not plan to undertake graduate study.

Psych. 180. Physiological Psychology (3)—First semester. Prerequisite, Psych. 145. (Andrews and Ross.)

An introduction to research on the physiological basis of human behavior, including considerations of sensory phenomena, motor coordination, emotion, drives, and the neurological basis of learning.

Psych. 181. Animal Behavior (3)—(Same as Zool. 181.)—Second semester. Prerequisite, consent of instructor. (Ross.)

A study of animal behavior, including considerations of social interactions, learning, sensory processes, motivation, and experimental methods, with a major emphasis on mammals.

Psych. 191, 192. Advanced General Psychology (3, 3)—First and second semesters. Prerequisite, 15 hours of Psychology including Psych. 145 and consent of instructor. (Ross, Cofer and Brush.)

A systematic review of the more fundamental investigations upon which modern psychology is based. Intended primarily for exceptional senior majors and for graduate students.

Psych. 194. Independent Study in Psychology (1-3)—First and second semesters. Prerequisites, senior standing and written consent of individual faculty supervisor. (Staff.)

Integrated reading under direction, leading to the preparation of an adequately documented report on a special topic.

Psych. 195. Minor Problems in Psychology (1-3)—First and second semesters. Prerequisite, written consent of individual faculty supervisor. (Staff.)

An individualized course designed to allow the student to pursue a specialized topic or research project under supervision; also designed to allow groups of students to work under supervision in a topical area not included in the courses offered at the graduate level.

Psych. 198. Proseminar: Professional Aspects of Psychological Science (2)—Second semester. Prerequisite, consent of faculty advisor. (Staff.)

Survey of professional problems in Psychology, including considerations of contemporary developments, professional ethics, literature resources, formulation of critical research problems, and discussion of the major institutions requiring psychological services.

For Graduate Students

(All the following courses require consent of the instructor.)

Psych. 202. Seminar in Advanced Experimental Psychology (2).
(Andrews and Staff.)

Psych. 203, 204. Graduate Seminar (2, 2)—First and second semesters.
(Staff.)

Psych. 205, 206. Historical Viewpoints and Current Theories in Psychology (3, 3)—First and second semesters. (Hackman and Cofer.)

Psych. 211. Job Analysis and Evaluation (3)—First semester. (Solem.)

Psych. 220. Psychological Concepts in Mental Health (2)—Second semester.
(Gustad and Magoon.)

Psych. 221. Seminar in Counseling Psychology (2) (Gustad and Magoon.)

Psych. 222. Seminar in Clinical Psychology (2)—Prerequisites, Psych. 150, 220.

Psych. 223. Diagnosis and Correction of Reading Difficulties (3)—Second semester. Prerequisites, Psych. 150, 220. (Magoon.)

Psych. 224. Advanced Procedures in Clinical and Counseling Psychology (2).
(Staff.)

Psych. 225. Practicum in Counseling and Clinical Procedures (1-3)—First and second semesters. Prerequisite, Psych. 220. (Gustad and Staff.)

Psych. 230. Determinants of Human Efficiency (3)—Second semester.
(Ross.)

Psych. 231. Training Procedures in Industry (3)—Second semester.
(Solem.)

Psych. 233. Social Organization in Industry (3)—First semester.
(Solem.)

- Psych. 235. *Psychological Aspect of Management-Union Relations* (3)—Second semester. (Solem.)
- Psych. 240. *Interview and Questionnaire Techniques* (3)—Second semester. (Hackman.)
- Psych. 241. *Mass Communication and Persuasion* (3)—Second semester. (McGinnies.)
- Psych. 242. *Seminar in Social Psychology* (3)—Second semester. (McGinnies.)
- Psych. 250. *Mental Test Theory* (2)—First semester. Prerequisite, Psych. 253. (Gustad.)
- Psych. 251. *Development of Predictors* (3)—First semester. Prerequisite, Psych. 253. (Andrews.)
- Psych. 252, 253. *Advanced Statistics* (3, 3)—First and second semesters. Prerequisite, Psych. 106. (Andrews and Brush.)
- Psych. 255. *Seminar in Psychometric Theory* (2)—Prerequisite, Psych. 253. (Andrews.)
- Psych. 260. *Individual Tests* (3)—Laboratory fee, \$4.00. Prerequisite, Psych. 150. (Magoon and Pumroy.)
- Psych. 262. *Appraisal of Personality* (3)—Prerequisite, Psych. 150. (Cofer.)
- Psych. 264. *Projective Tests* (3)—Second semester. Laboratory fee, \$4.00. Prerequisite, Psych. 260. (Cofer.)
- Psych. 265. *Advanced Developmental Psychology* (2). (Staff.)
- Psych. 266, 267. *Theories of Personality and Motivation* (3, 3)—First and second semesters. (Cofer.)
- Psych. 270. *Advanced Abnormal Psychology* (3)—Prerequisite, Psych. 131. (Cofer and Gustad.)
- Psych. 271. *Special Testing of Disabilities* (3)—Second semester. Prerequisite, Psych. 260. (Magoon.)
- Psych. 272, 273. *Individual Clinical Diagnosis* (3, 3)—Prerequisite, Psych. 260. (Gustad.)

Psych. 280. Advanced Psychophysiology (2)—First semester.
(Andrews and Ross.)

Psych. 288, 289. Special Research Problems (1-3)—First and second semesters.
(Staff.)

Psych. 290, 291. Research for Thesis (Credit arranged)—First and second semesters.
(Staff.)

SOCIOLOGY

Professors Hoffsommer, Lejins, Associate Professors Melvin, Shankweiler; Assistant Professors Anderson, Coates, Cussler, Fitzgerald, Rohrer, McElhanie; Instructors Dahms, Felton, Franz, Hirzel, Motz, Schmidt, Tejler; Part Time Instructors Marches, Shelberg, Tomlin; Part Time Junior Instructors Laws, Miles.

Sociology 1 or its equivalent is prerequisite to all other courses in sociology excepting Soc. 5.

Sociology 2, 183, 186 and 196 or their equivalents are required for an undergraduate major in sociology.

Soc. 1. Sociology of American Life (3)—First and second semesters. Summer School. This course is one of a group of four courses within Elective Group I of the American Civilization Program. It may also be taken by students who qualify by tests to select substitute courses in the Program (provided the student has not taken the course as his Group I elective).
(Hoffsommer and Staff.)

Sociological analysis of the American social structure; metropolitan, small town, and rural communities; population distribution, composition and change; social organization.

Soc. 2. Principles of Sociology (3)—First and second semesters. Prerequisite, Soc. 1 or sophomore standing.
(Cussler.)

The basic forms of human association and interaction; social processes; institutions; culture; human nature and personality.

Soc. 5. Anthropology (3)—First semester. Summer School (2). This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program.
(Anderson.)

Introduction to anthropology; origins of man; development and transmission of culture; backgrounds of human institutions.

Soc. 13. Rural Sociology (3)—First semester. (Hoffsommer, Coates.)
Rural life in America; its people, social organization, culture patterns, and problems.

Soc. 14. Urban Sociology (3)—Second semester. Summer School (2).
(Schmidt.)

Urban growth and expansion; characteristics of city populations; urban institutional and personality patterns; relations of city and country.

Soc. 51. Social Pathology (3)—First semester. Summer School (2). Prerequisite, Soc. 1 and sophomore standing. (Shankweiler, Franz.)

Personal-social disorganization and maladjustment; physical and mental handicaps; economic inadequacies; programs of treatment and control.

Soc. 52. Criminology (3)—Second semester. Prerequisite, Soc. 1 and Sophomore standing. (Lejins.)

Criminal behavior and the methods of its study; causation; typologies of criminal acts and offenders; punishment, correction, and incapacitation; prevention of crime.

Soc. 62. Social Institutions (3)—Second semester. Prerequisite, Soc. 1 and sophomore standing. (Melvin.)

Nature and function of social institutions; the perpetuation of behavior through customs and social norms; typical contemporary American institutions.

Soc. 64. Courtship and Marriage (3)—First and second semesters. Summer School (2). Prerequisite, Soc. 1 and sophomore standing. (Shankweiler and Dahms.)

A sociological study of courtship and marriage including consideration of physiological and psychological factors. Inter-cultural comparisons and practical considerations. Designed primarily for students in the lower division.

For Advanced Undergraduates and Graduates

Sociology 1 or its equivalent and junior standing are prerequisite to courses numbered 100 to 199.

Soc. 105. Cultural Anthropology (3)—Second semester. Summer School (2). (Anderson.)

A survey of the simpler cultures of the world, with attention to historical processes and the application of anthropological theory to the modern situation.

Soc. 106. Archeology (3)—Second semester. (Anderson.)

A survey of human cultural developments as revealed by archeological methods, with materials to be drawn from selected areas of both Old and New Worlds.

Soc. 112. Rural-Urban Relations (3)—First semester. Summer School (2). (Cussler.)

The ecology of population and the forces making for change in rural and urban life; migration, decentralization and regionalism as methods of studying individual and national issues. Applied field problems.

Soc. 113. The Rural Community (3)—Second semester. (Hoffsommer, Coates.)

A detailed study of rural life with emphasis on levels of living, the family, school, and church and organizational activities in the fields of health, recreation, welfare, and planning.

Soc. 114. The City (3)—First semester. Summer School (2). (Schmidt.)

The rise of urban civilization and metropolitan regions; ecological process and structure; the city as a center of dominance; social problems, control and planning.

Soc. 115. Industrial Sociology (3)—First and second semesters. Summer School (2). (Coates.)

The sociology of human relations in American industry and business. Complex industrial and business organizations as social systems. Social relationships within and between industry, business, community, and society.

Soc. 116. Military Sociology (3)—First and second semester. (Coates.)

The sociology of military life. Social change and the growth of military institutions. Complex formal military organizations. Military organizations as social systems. Military service as an occupation or profession. Career patterns, problems and satisfactions. Relations between military institutions, civilian communities and society.

Soc. 118. Community Organization (3)—First semester. Summer School (2). (DiBella.)

Community organization and its relation to social welfare; analysis of community needs and resources; health, housing, recreation; community centers; neighborhood projects.

Soc. 121. Population (3)—First semester. Summer School (2). (Hirzel.)

Population distribution and growth in the United States and the world; population problems and policies.

Soc. 122. Population (3)—Second semester. (Hirzel.)

Trends in fertility and mortality, migrations, population estimates and the resulting problems and policies.

Soc. 123. Ethnic Minorities (3)—First semester. Summer School (2). (Lejins.)

Basic social processes in the relations of ethnic groups within the state; immigration groups and the Negro in the United States; ethnic minorities in Europe.

Soc. 124. The Culture of the American Indian (3)—Second semester. (Anderson.)

A study of type cultures; cultural processes; and the effects of acculturation on selected tribes of Indians in the Americas.

Soc. 125. Cultural History of the Negro (3)—First semester. (Anderson.)

The cultures of Africa south of the Sahara and the cultural adjustments of the Negro in North and South America.

Soc. 131. Introduction to Social Service (3)—First and second semesters. (DiBella.)

General survey of the field of social-welfare activities; historical development; growth, functions, and specialization of agencies and services, private and public.

Soc. 136. Sociology of Religion (3)—First semester. Summer School (2). (Anderson.)

Varieties and sources of religious experience. Religious institutions and the role of religion in social life.

Soc. 141. Sociology of Personality (3)—First semester. Summer School (2). (Motz.)

Development of human nature and personality in contemporary social life; processes of socialization; attitudes, individual differences, and social behavior.

Soc. 144. Collective Behavior (3)—Second semester. (Cussler.)

Social interaction in mass behavior; communication processes; structure and functioning of crowds, strikes, audiences, mass movements, and the public.

Soc. 145. Social Control (3)—First semester. (Motz.)

Forms, mechanisms, and techniques of group influence on human behavior; problems of social control in contemporary society.

Soc. 147. Sociology of Law (3)—First semester. (Lejins.)

Law as a form of social control; interrelation between legal and other conduct norms as to their content, sanctions, and methods of securing conformity; law as an integral part of the culture of the group; factors and processes operative in the formation of legal norms as determinants of human behavior.

Soc. 153. Juvenile Delinquency (3)—First semester. Summer School (2). (Lejins.)

Juvenile delinquency in relation to the general problem of crime; analysis of factors underlying juvenile delinquency; treatment and prevention.

Soc. 154. Crime and Delinquency Prevention (3)—Second semester. Prerequisite, Soc. 52 or Soc. 153 or consent of instructor. (Offered in alternate years with Soc. 156. (Lejins.)

Mobilization of community resources for the prevention of crime and delinquency; area programs and projects.

Soc. 156. Institutional Treatment of Criminals and Delinquents (3)—Second semester. Summer School (2). Prerequisite, Soc. 52 or Soc. 153 or consent of instructor. (Offered in alternate years with Soc. 154.) (Lejins.)

Organization and functions of penal and correctional institutions for adults and juveniles.

Soc. 160. Interviewing in Social Work (1½). Summer School only.
(DiBella.)

Soc. 161. The Sociology of War (3)—First semester. Summer School (2).
(Coates.)

The origin and development of armed forces as institutions; the social causes, operations and results of war as social conflict; the relations of peace and war and revolution in contemporary civilization.

Soc. 162. Basic Principles and Current Practice in Public Welfare (3). Summer School only.
(DiBella.)

Soc. 163. Attitude and Behavior Problems in Public School Work (1½). Summer School only.
(DiBella.)

Soc. 164. The Family and Society (3)—Second semester. Summer School (2). Prerequisite, Soc. 1 and Soc. 64 or equivalent.
(Shankweiler.)

Study of the family as a social institution; its biological and cultural foundations, historic development, changing structure and function; the interactions of marriage and parenthood, disorganizing and reorganizing factors in present day trends.

Soc. 171. Family and Child Welfare (3)—First semester. Summer School (2).
(DiBella.)

Programs of family and child welfare agencies; social services to families and children; child placement; foster families.

Soc. 173. Social Security (3)—First semester.
(Staff.)

The social security program in the United States; public assistance; social insurance.

Soc. 174. Public Welfare (3)—Second semester.
(DiBella.)

Development and organization of the public welfare movement in the United States; social legislation; interrelations of federal, state, and local agencies and institutions.

Soc. 180. Small Group Analysis (3)
(Franz.)

Analysis of small group structure and dynamics. Review of research on small groups in factories, military service, schools and communities. Presentation of techniques used in the study of small groups.

Soc. 183. Social Statistics (3)—First and second semesters.
(Schmidt.)

Measures of central tendency and dispersion, use of statistical inference in simple testing of null hypotheses, chi square, and labor saving computational devices for correlation.

Soc. 185. Advanced Social Statistics (3)—Second semester. Prerequisite, Soc. 183, or equivalent.
(Schmidt.)

Provides refined statistical research methods for advanced students in the social sciences. Sampling theory, specialized correlation technique, advanced tests of significance, and other procedures.

Soc. 186. Sociological Theory (3)—First and second semesters.

(Melvin.)

Development of the science of sociology; historical backgrounds; recent theories of society.

Soc. 191. Social Field Training (1-3)—First and second semesters. Prerequisites: For social work field training, Soc. 131; for crime control field training, Soc. 52 and 153. Enrollment restricted to available placements.

(DiBella.)

Supervised field training in public and private social agencies. The student will select his particular area of interest and be responsible to an agency for a definite program of in-service training. Group meetings, individual conferences, and written progress reports will be required part of the course.

Soc. 196. Senior Seminar (3)—Second semester. Required of and open only to senior majors in sociology.

(Hoffsommer.)

Scope, fields, and methods of sociology; practical applications of sociological knowledge. Individual study and reports.

For Graduates

Prerequisites for entrance upon graduate study leading to an advanced degree with a major in sociology: either (1) an undergraduate major (totaling at least 24 semester hours) in sociology or (2) 12 semester hours of sociology (including 6 semester hours of advanced courses) and 12 additional hours of comparable work in economics, political science, or psychology. Reasonable substitutes for these prerequisites may be accepted in the case of students majoring in other departments who desire a graduate minor or several courses in sociology.

With the exception of Soc. 201, 285, and 291, individual courses numbered 200 to 299 will ordinarily be offered in alternate years.

Soc. 201. Methods of Social Research (3)—First semester.

(Hoffsommer.)

Selection and formulation of research projects; methods and techniques of sociological investigation and analysis. Required of graduate majors in sociology.

Soc. 215. Community Studies (3)—First semester.

(Hoffsommer.)

Intensive study of the factors affecting community development and growth, social structure, social stratification, and social institutions; analysis of particular communities.

Soc. 221. Population and Society (3)—Second semester.

(Hirzel.)

Selected problems in the field of population; quantitative and qualitative aspects; American and world problems.

Soc. 224. Race and Culture (3)—Second semester. (Anderson.)

Race and culture in contemporary society; mobility and the social effects of race and culture contacts and intermixture.

Soc. 230. Comparative Sociology (3)—Second semester. (Melvin.)

Comparison of the social institutions, organizations, patterns of collective behavior, and art manifestations of societal values of various countries.

Soc. 241. Personality and Social Structure (3)—Second semester. (Staff.)

Comparative analysis of the development of human nature, personality, and social traits in select social structures.

Soc. 246. Public Opinion and Propaganda (3)—Second semester. (Staff.)

Processes involved in the formation of mass attitudes; agencies and techniques of communication; quantitative measurement of public opinion.

Soc. 253. Advanced Criminology (3)—First semester. (Lejins.)

Survey of the principal issues in contemporary criminological theory and research.

Soc. 254. Seminar: Criminology (3)—Second semester. (Lejins.)

Selected problems in criminology.

Soc. 255. Seminar: Juvenile Delinquency (3)—First semester. (Lejins.)

Selected problems in the field of juvenile delinquency.

Soc. 256. Crime and Delinquency as a Community Problem (3)—Second semester. (Lejins.)

An intensive study of selected problems in adult crime and juvenile delinquency in Maryland.

Soc. 257. Social Change and Social Policy (3)—First semester. (Staff.)

Emergence and development of social policy as related to social change; policy-making factors in social welfare and social legislation.

Soc. 262. Family Studies (3)—Second semester. (Shankweiler.)

Case studies of family situations; statistical studies of family trends, methods of investigation and analysis.

Soc. 264. The Sociology of Mental Health (3)—First semester. (Melvin.)

A study of the sociological factors that condition mental health together with an appraisal of the group dynamics of its preservation.

Soc. 282. Sociological Methodology (3)—Second semester. (Staff.)

Logic and method of sociology in relation to the general theory of scientific method; principal issues and points of view.

Soc. 285. Seminar: Sociological Theory (3)—First semester. (Melvin.)

Critical and comparative study of contemporary European and American theories of society.

Soc. 290. Research in Sociology (Credit to be determined)—First and second semesters. (Thesis Advisor.)

Soc. 291. Special Social Problems (Credit to be determined)—First and second semesters. (Staff.)

Individual research on selected problems.

SPEECH AND DRAMATIC ART

Associate Professors Strausbaugh, Hendricks; Assistant Professors Batka, Linkow, Niemeyer, Provinsen; Instructors Bedwell, Byrd, Conlon, Craven, Dolan, Gillis, Pugliese, Starcher; Jr. Instructors Gow, Hillis Monroe, Peet, Price, Smith, Taylor, Todaro; Lecturers Butler, Causey, Gerlach, Lore, Shutts.

Speech 1, 2. Public Speaking (3, 2)—First and second semesters. Prerequisite for advanced speech courses. Speech I prerequisite for Speech II. (Linkow and Staff.)

The preparation and delivery of short original speeches; outside readings; reports, etc. It is recommended that this course be taken during the freshman year. Laboratory fee \$1.00 each semester.

Speech Clinic—No Credit. (Conlon and Staff.)

Remedial work in minor speech defects. The work of the clinic is conducted in individual conferences and in small group meetings. Hours arranged by consultation with the respective speech instructor.

Speech 3. Fundamentals of General American Speech (3)—Each semester. (Hendricks and Staff.)

Training in auditory discrimination of speech sounds, rhythms and inflections of general American speech. Analysis of the physiological bases of speech production and the phonetic elements of speech reception. This course is required of speech majors, and recommended for foreign students.

Speech 4. Voice and Diction (3)—First and Second semesters. (Starcher and Staff.)

Emphasis upon the improvement of voice, articulation, and phonation. May be taken concurrently with Speech 1, 2.

Speech 5, 6. Advanced Public Speaking (2, 2)—First and second semes-

ters. Prerequisite, Speech 1, 2, or consent of the instructor.

(Starcher and Staff.)

Advanced work on basis of Speech 1, 2. Special emphasis is placed upon speaking situations the students will face in their respective vocations.

Speech 7. Public Speaking (2)—Each semester. The preparation and delivery of speeches on technical and general subjects. Laboratory fee, \$1.00.
(Linkow and Staff.)

Speech 8, 9. Acting (3, 3)—First and second semesters. Admission by consent of instructor.
(Niemeyer.)

Basic principles of histrionic practice.

Speech 10. Group Discussion (2)—First and second semesters.
(Linkow and Staff.)

A study of the principles, methods, and types of discussion, and their application in the discussion of contemporary problems.

Speech 11, 12. Debate (2, 2)—First and second semesters. (Todoro.)

A study of the principles of argument, analysis, evidence, reasoning, fallacies, briefing, and delivery, together with their application in public speaking.

Speech 13. Oral Interpretation (3)—First semester. (Provensen.)

The oral interpretation of literature and the practical training of students in the art of reading.

Speech 14. Stagecraft (3)—First semester. (Byrd.)

Fundamentals of technical production. Emphasis on construction of scenery. Laboratory fee, \$2.00.

Speech 15. Stagecraft (3)—Second semester. (Byrd.)

Technical production. Emphasis on stage lighting. Prerequisite, Speech 14. Laboratory fee, \$2.00.

Speech 16. Introduction to the Theatre (3)—First and second semesters.
(Pugliese.)

A general survey of the fields of the theatre. Prerequisite for all courses in Drama.

Speech 17. Make-up (2)—Second semester. One lecture and one laboratory a week.
(Byrd.)

A lecture-laboratory course in the theory and practice of stage make-up, covering basic requirements as to age, type, character, race, and period. Laboratory fee, \$2.00.

Speech 18, 19. Introductory Speech (1, 1)—First and second semesters.
(Provensen and Staff.)

This course is designed to give those students practice in public speaking who cannot schedule Speech 1, 2. Speech 18 prerequisite for Speech 19.

Speech 22. Introduction to Radio and Television (3)—First and second semesters. Prerequisite for all courses in Radio. (Batka.)

The development, scope, and influence of American broadcasting and telecasting, including visits to local radio and television stations, with guest lecturers from Radio Station WTOP and Television Station WTOP-TV.

Speech 23. Parliamentary Law (1)—First and second semesters. (Strausbaugh.)

A study of the principles and application of parliamentary law as applied to all types of meetings. Thorough training in the use of Robert's Rules of Order.

For Advanced Undergraduates and Graduates

Speech 102. Radio Production (3)—Second semester. (Batka.)

A study of the multiple problems facing the producer. Special emphasis is given to acoustic setup, casting, "miking," timing, cutting, and the coordination of personnel factors involved in the production of radio programs. Admission by consent of instructor. Laboratory fee, \$2.00.

Speech 105. Speech-Handicapped School Children (3)—First and second semesters. Prerequisite, Speech 3 recommended. (Craven.)

The occurrence, identification and treatment of speech handicaps in the classroom. An introduction to speech pathology.

Speech 106. Clinical Practice (1 to 5 credits, up to 9)—Each semester and summer. Prerequisite: Speech 105. (Conlon.)

Clinical practice in various methods of corrective procedures with various types of speech cases in the University clinic, veterans hospitals, and the public schools. May be taken for 1-5 credit hours per semester. May be repeated for a total of 9 semester hours credit. Laboratory fee, \$1.00 per hour.

Speech 107. Advanced Oral Interpretation (3)—Second semester. Prerequisite, Speech 13. (Provensen.)

Emphasis upon the longer reading. Program planning.

Speech 108. Public Speaking (2)—Second semester. Limited to Junior Engineers. Prerequisite, Speech 7. (Linkow.)

Continuation of Speech 7 with emphasis upon engineering projects that fall within student's own experience.

Speech 109. Speech and Language Development of Children (3)—Second semester. Admission by consent of instructor. (Hendricks.)

An analysis of normal and abnormal processes of speech and language department in children.

Speech 111. Seminar (3)—First and second semesters. Required of speech majors. Present-day speech research. (Strausbaugh.)

Speech 112. Phonetics (3)—First semester. Prerequisite, Speech 3 or equivalent. (Conlon.)

Training in the recognition and production of the sounds of spoken English, with an analysis of their formation. Practice in transcription. Mastery of the international phonetic alphabet. Laboratory fee, \$3.00.

Speech 113. Play Production (3)—Second semester. (Pugliese.)

Development of procedure followed by the director in preparing plays for public performance.

Speech 114. The Film as an Art Form (3) (Niemeyer.)

A study of the motion picture as a developing form of entertainment, communication, and artistic expression. A series of significant American and foreign films are viewed to illustrate the artistic, historical and sociological trends of the twentieth century. Laboratory fee, \$7.50.

Speech 115. Radio in Retailing (3)—First semester. Limited to students in the College of Home Economics. Prerequisites, Speech 1, 2. English 1, 2. Junior standing. Laboratory fee \$2.00. (Batka.)

Writing and production of promotional programs for the merchandising of wearing apparel and housefurnishings. Collaboration with Washington and Baltimore radio stations and retail stores.

Speech 116. Radio Announcing (3)—Second semester. Prerequisite, Speech 4. (Batka.)

The theory and application of all types of announcing. Laboratory fee, \$2.00.

Speech 117. Radio Continuity Writing (3)—First semester. (Bedwell.)

A study of the principles and methods of writing for broadcasting. Application will be made in the writing of the general types of continuity. Admission by consent of instructor.

Speech 118. Advanced Radio Writing (3)—Second semester. Prerequisite, Speech 117. (Bedwell.)

Advanced work with emphasis upon the dramatic form. Admission by consent of instructor.

Speech 119. Radio Acting (3)—Second semester. (Pugliese.)

A workshop course designed to give the student practice in radio acting. Admission by consent of instructor.

Speech 120. Speech Pathology (3)—First semester. Prerequisite: Speech (Hendricks.)

A continuation of Speech 105, with emphasis on the causes and treatment of organic speech disorders. Laboratory fee, \$3.00.

Speech 122, 123. Radio Workshop (3, 3)—First and second semesters.
(Batka.)

A laboratory course dealing with all phases of producing a radio program. Admission by consent of instructor. Laboratory fee \$2.00 each semester.

Speech 124, 125. American Public Address (3, 3)—First and second semesters.
(Strausbaugh and Staff.)

The first semester covers the period from Colonial times to the Civil War period. The second semester covers from the Civil War period through the contemporary period.

Speech 126. Semantic Aspects of Speech in Human Relations (3)—Second semester.
(Hendricks.)

An analysis of speech and language habits from the standpoint of General Semantics.

Speech 127, 128. Military Speech and Commands (2, 2)—First and second semesters. Limited to students in the College of Military Science and Tactics.
(Pugliese.)

The preparation and delivery of lectures dealing with military subjects. Effective execution of field orders, commands, etc. Extensive use of voice recordings.

Speech 129, 130. Play Directing (3, 3)—Admission by consent of Instructor.
(Niemeyer.)

A lecture-laboratory course dealing with the fundamentals of script cutting, pacing, movement, blocking, and rehearsal routine as applied to the directing of plays.

Speech 131. History of the Theatre (3)—First semester. (Niemeyer.)

A survey of dramatic production from early origins to 1800.

Speech 132. History of the Theatre (3)—Second semester. (Niemeyer.)

A survey of dramatic production from 1800 to the present.

Speech 133. Staff Reports, Briefings, and Visual Aids (3)—Second semester. Limited to the students in the College of Military Science. Prerequisites, Speech 5 and 6.
(Linkow.)

Lecture and laboratory course dealing with the techniques used in military briefings, staff reports and the use of visual aids.

Speech 135. Instrumentation in Speech and Hearing Science (2)—First semester. Prerequisite, Speech 3.
(Linkow.)

The use of electronic equipment in the measurement of speech and hearing. Laboratory fee, \$2.00.

Speech 136. Principles of Speech Therapy (3)—Prerequisite: Speech 120.
(Hendricks.)

Differential diagnosis of speech and language handicaps and the application of psychological principles of learning, motivation and adjustment in the treatment of speech disorders. Laboratory fee, \$3.00.

Speech 137. Experimental Phonetics (3)—Prerequisite: Speech 112.
(Hendricks.)

The application of experimental methods in the quantitative analysis of the phonetic elements of speech. Laboratory fee, \$3.00.

Speech 138. Methods and Materials in Speech Correction (3)—Prerequisite, Speech 120 or the equivalent.
(Craven.)

The design and use of methods and materials for diagnosis, measurement, and retraining of the speech-handicapped. Laboratory fee, \$3.00.

Speech 139. Theatre Workshop (3)—Prerequisite, Speech 8 or Speech 14.
Given each semester. (Strausbaugh.)

A laboratory course designed to provide the student with practical experience in all phases of theatre production.

Speech 140. Principles of TV Production (3)—First semester. Prerequisite, Speech 22.
(Bedwell.)

A study of the theory, methods, techniques and problems of television direction and production on a local and national level, including an examination of the TV camera, scenery, film, and lighting.

Speech 141. Introduction to Audiometry (2)—First semester. Prerequisite, Speech 3.
(Craven.)

Analysis of various methods and procedures in evaluating hearing losses. Required for students whose concentration is in Speech and Hearing Therapy. Laboratory fee, \$2.00.

Speech 142. Speech Reading and Auditory Training (2)—Second semester. Prerequisite, Speech 3.
(Conlon.)

Methods of training individuals with hearing loss to recognize, interpret, and understand spoken language. Required for students whose concentration is in speech and hearing therapy. Laboratory fee, \$2.00.

For Graduates

The Department maintains a reciprocal agreement with Walter Reed General Hospital whereby clinical practice may be obtained at the Army Audiology and Speech Correction Center, Forest Glen, Maryland, under the direction of James P. Albrite, M.D., Director.

Speech 200. Thesis (3, 6)—Credit in proportion to work done and results accomplished.
(Hendricks.)

Speech 201. Special Problems Seminar (A Through K) (1, 3)—(6 hrs. applicable toward M.A. degree.) (Hendricks.)

A. Stuttering; B. Cleft Palate; C. Delayed Speech; D. Articulation; E. Cerebral Palsy; F. Voice; G. Special Problems of the Deaf; H. Foreign Dialect; I. Speech Intelligibility; J. Neurophysiology of Hearing; K. Minor Research Problems.

Speech 202. Techniques of Research in Speech and Hearing (3)—First semester. (Butler.)

Analysis of research methodology including experimental techniques, statistical analysis and preparation of reports for scientific investigations in speech and hearing science. Required of candidates for Master's degree in speech and hearing therapy.

Speech 210. Anatomy and Physiology of Speech and Hearing (3). (Gerlach.)

A study of the anatomy and physiology of the auditory and speech mechanisms. Laboratory fee, \$3.00.

Speech 211. A, B, C, D. Advanced Clinical Practice (1, 3 up to 12)—(6 hrs. applicable toward M.A. degree.) (Craven.)

Supervised training in the application of clinical methods in the diagnosis and treatment of speech and hearing disorders. Laboratory fee, \$1.00 per hour.

Speech 212. Advanced Speech Pathology (3)—Laboratory fee, \$3.00. (Lore.)

Etiology and therapy for organic and functional speech disorders. Laboratory fee, \$3.00.

Speech 214. Clinical Audiometry (3). (Shutts.)
Testing of auditory acuity with pure tones and speech. Laboratory fee, \$3.00.

Speech 216. Communication Skills for the Hard-of-Hearing (3)—First semester. (Causey.)

Speech reading, auditory training, and speech conservation problems in the rehabilitation of the hard-of-hearing.

Speech 217. Selection of Prosthetic Appliances for the Acoustically Handicapped (3). (Shutts.)

A laboratory course in modern methods of utilizing electronic hearing aids. Laboratory fee, \$3.00.

Speech 218. Speech and Hearing in Medical Rehabilitation and Special Education Programs (3)—Second semester. (Hendricks.)

Administrative problems involved in the organization and operation of speech and hearing therapy under different types of programs.

Speech 219. Speech Disorders of the Brain-Injured (3). (Hendricks.)

Methods of evaluation and treatment of children and adults who have suffered injury to brain tissue, with subsequent damage to speech and language processes. Laboratory fee, \$3.00.

Speech 221. Communication Theory and Speech and Hearing Problems (3)—Second semester. (Hendricks.)

Analysis of current theories of communication as they apply to research and therapy in speech and hearing.

ZOOLOGY

Professors Schoenborn and Wharton; Lecturers Baker, Camin, Reynolds, and Stradtman; Associate Professors Anastos, Brown, and Littleford; Assistant Professors Allen, Benarde, Grollman, Haley, Henson, Highton, Ramm, Winn; Instructor Costello.

All zoology courses with laboratory have a laboratory fee of \$8.00 per course per semester.

Zool. 1. General Zoology (4)—First and second semesters. Summer Session and Pharmacy. Two lectures and two two-hour laboratory periods a week. Zool. 1 and Zool. 2 satisfy the freshman premedical requirement in general biology. (Wharton.)

This course, which is cultural and practical in its aim, deals with the basic principles of animal life.

Zool. 2. Advanced General Zoology (4)—Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 1 or 16. (Allen.)

A study of the anatomy, classifications, and life histories of representative animals, invertebrates and vertebrates.

Zool. 4. The Animal Kingdom (3)—Second semester. Pharmacy only. Two lectures and one laboratory period a week. (Costello.)

A survey of the animal kingdom with special emphasis on parasites, insects and other forms that have special economic interrelationships with man.

Zool. 5. Comparative Vertebrate Morphology (4)—First semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. (Ramm.)

A comparative study of selected organ systems in certain vertebrate groups.

Zool. 14. Human Anatomy and Physiology (4)—First semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 1 or 16. (Grollman.)

For students who desire a general knowledge of human anatomy and physiology.

Zool. 15. Human Anatomy and Physiology (4)—Second semester. Two

lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 14.
(Schoenborn.)

A continuation of Zool. 14.

Zool. 16. Human Physiology (4)—First semester. Two lectures and two two-hour laboratory periods a week. Open only to those students of the College of Home Economics for whom this is a required course. (Wharton.)

An elementary course in physiology.

Zool. 20. Vertebrate Embryology (4)—Second semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. (Ramm.)

Basic principles of early development of the vertebrates with special emphasis on the development of the chick to the end of the fourth day and early mammalian embryology.

Zool. 53. Physiology of Exercise (2)—Two lectures a week. Prerequisite, Zool. 15. (———)

A detailed consideration of the mechanism of muscular contraction; the metabolic, circulatory, and the respiratory responses in exercise; and the integration by means of the nervous system. Open only to students for whom this is a required course.

Zool. 55S. Development of the Human Body (2)—Summer Session. Five lectures a week. (———)

A study of the main factors affecting the growth and development of the child with special emphasis on normal development.

Zool. 75, 76. Journal Club (1, 1)—First and second semesters. One lecture a week. Prerequisites, permission of the Department and a major in zoology. (Staff.)

Reviews, reports and discussions of current literature.

For Graduates and Advanced Undergraduates

Zool. 102. General Animal Physiology (4)—Second semester. Occasional Summer Session. Two lectures and two three-hour laboratory periods a week. Prerequisites, one year of zoology and one year of chemistry. (Grollman.)

The general principles of physiological functions as shown in mammals and lower animals.

Zool. 104. Genetics (3)—First semester. Summer Session. Three lectures a week. Prerequisite, one course in zoology or botany. (Highton.)

A consideration of the basic principles of heredity.

Zool. 108. Animal Histology (4)—Second semester. Occasional Summer Session. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. (Brown.)

A microscopic study of tissues and organs of vertebrates with special emphasis on the mammal. Practice in elementary histo-technique will be included.

Zool. 110. Parasitology (4)—First semester. Occasional Summer Session. Two lectures and two two-hour laboratory periods a week. Prerequisite, one year of zoology. (Haley.)

A study of the taxonomy, morphology, physiology and life cycles of animal parasites.

Zool. 111. Veterinary Parasitology (4)—Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, one year of zoology or permission of the instructor. Alternate years. Not offered in 1957-58. (Anastos.)

Classification, epidemiology and control of economically important parasites of domestic animals.

Zool. 112. Wildlife Parasitology (4)—Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, one year of zoology or permission of the instructor. Alternate years. To be offered in 1957-58. (Anastos.)

Classification, epidemiology and control of economically important parasites of game animals, fur bearers and commercial and game fishes.

Zool. 118. Invertebrate Zoology (4)—First semester. Occasional Summer Session. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. (Allen.)

An advanced course dealing with the taxonomy, morphology, and embryology of the invertebrates, exclusive of insects.

Zool. 121. Principles of Animal Ecology (3)—Second semester. Occasional Summer Session. Two lectures and one three-hour laboratory period a week. Prerequisite, one year of zoology and one year of chemistry. (Henson.)

Animals are studied in relation to their natural surroundings. Biological, physical and chemical factors of the environment which affect the growth, behavior, habits, and distribution of animals are stressed.

Zool. 125. Fisheries Biology and Management (3)—First semester. Two lectures and one three-hour laboratory period a week. (Allen.)

A study of the biology and management of fresh and salt water fin fishes. Particular attention is given to practical applications in fisheries work.

Zool. 126. Shellfisheries (3)—Second semester. Two lectures and one three-hour laboratory period a week. (Allen.)

A study of the biology of shellfish and other invertebrates of economic importance. Particular attention is given to problems of management and conservation of these forms.

Zool. 127. Ichthyology (3)—Second semester. One lecture and two three-

hour laboratory periods a week. Prerequisites, Zool. 5 and 20. Alternate years. Not offered 1957-58. (Winn.)

A course in anatomy, embryology, distribution, habits and taxonomy of marine and fresh water fish.

Zool. 128. Zoogeography (4)—First semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, one year of zoology, botany, or geology. Alternate years. Not offered 1957-58. (Henson.)

Principles governing the geographical distribution of living things, with particular reference to ecological changes during geologic time.

Zool. 181. Animal Behavior (3)—(Same as Psych. 181)—Second semester. Three lectures a week. Prerequisite, permission of the instructor. Alternate years. To be offered 1957-58. (Ross.)

A study of animal behavior, including considerations of social interactions, learning sensory processes, motivation, and experimental methods, with a major emphasis on mammals.

For Graduates

Zool. 200. Marine Zoology (4)—First semester. Two lectures and two three-hour laboratory periods a week. Alternate years. To be offered 1957-58. (Allen.)

A course in the environmental characteristics of salt water. Particular attention is given to brackish water environments such as the Chesapeake Bay.

Zool. 202. Animal Cytology (4)—First semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, Zool. 108. Alternate years. Not offered 1957-58. (Brown.)

A study of cellular structure with particular reference to the morphology and physiology of cell organoids and inclusions.

Zool. 203. Advanced Embryology (4)—Second semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, Zool. 20. Alternate years. To be offered 1957-58. (Ramm.)

Mechanics of fertilization and growth. A review of the important contributions in the field of experimental embryology.

Zool. 204. Advanced Animal Physiology (4)—First semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, Zool. 102. (Schoenborn.)

The principles of general and cellular physiology as found in animal life.

Zool. 205. Limnology (4)—First semester. Two lectures and two three-hour laboratory periods a week. Alternate years. To be offered 1957-58. (Henson.)

Application of the methods and principles of ecology to the intensive study of freshwater ecosystems, with particular emphasis on the physics, chemistry and production biology of standing waters.

Zool. 206. Research (credit to be arranged)—First and second semesters. Summer Session. Work on thesis project only. A—Cytology; B—Embryology; C—Fisheries; D—Genetics; E—Parasitology; F—Physiology; G—Systematics; H—Ecology; and I—Behavior. (Staff.)

Zool. 207. Zoology Seminar (credit to be arranged)—First and second semesters. Summer Session. One lecture a week for each credit hour. A—Cytology; B—Embryology; C—Fisheries; D—Genetics; E—Parasitology; F—Physiology; G—Systematics; H—Ecology; I—Behavior; and S—Recent advances. (Staff.)

Zool. 208. Special Problems in Zoology (credit to be arranged)—First and second semesters. Summer Session. A—Cytology; B—Embryology; C—Fisheries; D—Genetics; E—Parasitology; F—Physiology; G—Systematics; H—Ecology; and I—Behavior. (Staff.)

Zool. 209. Advanced Parasitology (4)—First semester. Three lectures and one three-hour laboratory period a week. Prerequisite, Zool. 110 or permission of the instructor. Alternate years. Not offered in 1957-58. (Anastos.)

The nature, origin and interrelations of parasitism with emphasis upon life histories.

Zool. 210. Systematic Zoology (4)—Second semester. Three lectures and one three-hour laboratory period a week. Alternate years. Not offered 1957-58. (Highton.)

The principles and practices involved in the collection, preservation and classification of animals.

Zool. 211, 212. Lectures in Zoology (3, 3)—First and second semesters. Three lectures a week. (Visiting Lecturers.)

Advanced lectures by outstanding authorities in their particular field of zoology. As the subject matter is continually changing, a student may register several times, receiving credit for several semesters.

Zool. 215S. Fisheries Technology (4)—To be offered as needed during the Summer Session at the Sea Food Professing Laboratory, Crisfield, Maryland. Two lectures and two three-hour laboratory periods a week. (Littleford.)

The technological aspects of netting and collection of fish and other fishery resources, methods of handling the catch, marketing of fishery products, and recent advances in the utilization of fishery products.

Zool. 216. Physiological Cytology (4)—First semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, Chem. 161, 162,

Phys. 11, Zool. 102, or permission of the instructor. Alternate years. To be offered 1957-58. (Brown.)

A study of the structure and function of cells by means of chemical, physical and microscopic methods.

Zool. 220. Advanced Genetics (4)—First semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, Zool. 104. Alternate years. To be offered 1957-58. (Highton.)

A consideration of salivary chromosomes, the nature of the gene, chromosome irregularities, polyploidy, and mutations. Breeding experiments with *Drosophila* and small mammals will be conducted.

Zool. 223. Analysis of Animal Structure (4)—Second semester. Two lectures and two three-hour laboratory periods a week. Alternate years. Not offered 1957-58. (Ramm.)

The integration of morphological systems and application of physical laws to animal structures.

Zool. 231S. Acarology (3)—Summer Session only. Lecture and laboratory. (Camin.)

An introductory study of the Acarina or mites and ticks with special emphasis on classification and biology.

Zool. 232S. Medical and Veterinary Acarology (3)—Summer Session only. Lecture and laboratory. (Strandtmann.)

The recognition, collection, culture, and control of Acarina important to public health and animal husbandry with special emphasis on the transmission of diseases.

Zool. 233S. Agricultural Acarology (3)—Summer Session only. Lecture and laboratory. (Baker.)

The recognition, collection, culture and control of acarine pests of crops and ornamentals.

Zool. 234. Experimental Mammalian Physiology (4)—First semester. Two four-hour laboratory periods a week. Prerequisites, Zool. 102 and one year of chemistry above general chemistry. Alternate years. To be offered 1957-58. (Grollman.)

The theory, use, and application to research of instrumentation normally found in the physiology laboratory with an introduction to surgical techniques on both large and small animals.

Zool. 235. Comparative Behavior (4)—Second semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, Zool. 121 and 181, or permission of the instructor. Alternate years. To be offered 1957-58. (Winn.)

An advanced course that deals with comparative whole animal reactions to the inanimate and animate environment. Particular emphasis is placed on the correlation of field and laboratory studies.

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“**E**DUCATION does not mean teaching people what they do not know. It means teaching them to behave as they do not behave. It is not teaching the youth the shapes of the letters and the tricks of numbers, and then leaving them to turn their arithmetic to roguery and their literature to lust. It means, on the contrary, training them into the perfect exercise and kingly continence of their bodies and souls. It is painful, continual and difficult work to be done by kindness, by watching, by warning, by precedent, and by praise, but above all—by example.”—John Ruskin.

“In our country no man is worthy the honored name of statesman, who does not include the highest practicable education of the people in all his plans of administration.”—Horace Mann.

“Promote, then, as an object of primary importance institutions for the general diffusion of knowledge. In proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened.”—George Washington.

“The good education of youth has been esteemed by wise men in all ages as the surest foundation of the happiness both of private families and of commonwealths.”—Benjamin Franklin.

“The whole people must take upon themselves the education of the whole people and be willing to bear the expense of it.”—John Adams.

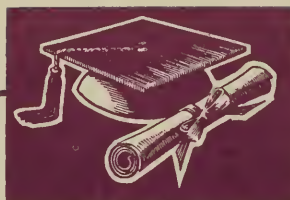
“If a nation expects to be ignorant and free in a state of civilization, it expects what never was and never will be.”—Thomas Jefferson.

“A popular government without popular information or the means of acquiring it, is but the prologue to a farce or a tragedy, or perhaps both.”
James Madison

“An educated man is never poor and no gift is more precious than education.”—Abraham Lincoln.

“Without popular education no government which rests on popular action can long endure; the people must be schooled in the knowledge and in the virtues upon which the maintenance and success of free institutions depend.”
—Woodrow Wilson

“We have faith in education as the foundation of democratic government.”
—Franklin D. Roosevelt



SEPARATE CATALOGS

At College Park

Individual catalogs of colleges and schools of the University of Maryland at College Park may be obtained by addressing the Office of University Relations, University of Maryland, College Park, Md.

These catalogs and schools are:

1. General Information
2. College of Agriculture
3. College of Arts and Sciences
4. College of Business and Public Administration
5. College of Education
6. College of Engineering
7. College of Home Economics
8. College of Military Science
9. College of Physical Education, Recreation and Health
10. College of Special and Continuation Studies
11. Summer School
12. Graduate School

At Baltimore

Individual catalogs for the professional schools of the University of Maryland may be obtained by addressing the Deans of the respective schools at the University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland. The professional schools are:

13. School of Dentistry
14. School of Law
15. School of Medicine
16. School of Pharmacy
17. School of Nursing

At Heidelberg

The catalog of the European Program may be obtained by addressing the Dean, College of Special and Continuation Studies, College Park, Maryland.

1957-1958



UNIVERSITY OF MARYLAND

THE COLLEGE OF

**business and
public
administration**

AT COLLEGE PARK



IMPORTANT

THE PROVISIONS of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

GENERAL INFORMATION

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, societies and special clubs, the University band, student publications, University Post Office and Supply Store, write to the Director of Publications for the General Information issue of the Catalog.

See Outside Back Cover for List of Other Catalogs
Index on inside back cover.

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Re-entered at the Post Office in College Park, Maryland, as second class mail matter under the Act of Congress of August 24, 1912.



BOARD OF REGENTS AND

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Members of the Board are appointed by the Governor of the State for

terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

A regular meeting of the Board is held the last Friday in each month, except during the months of July and August.

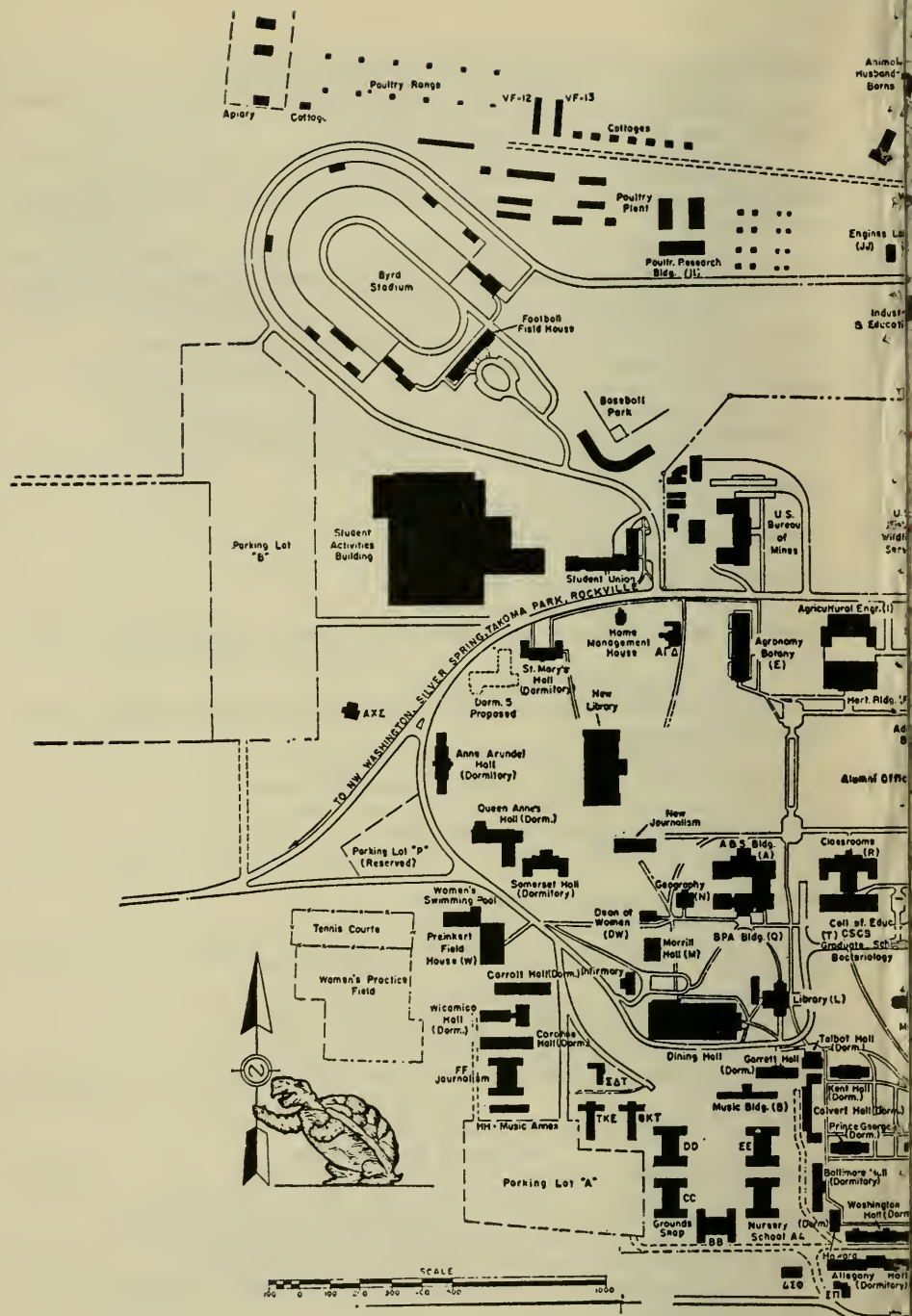
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B.A., Illinois College, 1933; LL.B., Cornell University, 1936.
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- IRVIN C. HAUT**, Director, Agricultural Experiment Station and Head, Department of Horticulture.
B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.
- LEON P. SMITH**, Dean of the College of Arts and Sciences.
B.A., Emory University, 1919; M.A., University of Chicago, 1928; Ph.D., 1930; Diplome de l'Institut de Touraine, 1932.
- J. FREEMAN PYLE**, Dean of the College of Business and Public Administration.
Ph.B., University of Chicago, 1917; M.A., 1918; Ph.D., 1925.
- MYRON S. AISENBERG**, Dean of the School of Dentistry.
D.D.S., University of Maryland, 1922.
- VERNON E. ANDERSON**, Dean of the College of Education.
B.S., University of Minnesota, 1930; M.A., 1936; Ph.D., University of Colorado, 1942.
- *S. SIDNEY STEINBERG**, Dean of the College of Engineering.
B.E., Cooper Union School of Engineering, 1910; C.E., 1913; Registered Professional Engineer. *Resigned January 31, 1957.
- WILBERT J. HUFF**, Director, Engineering Experiment Station and Chairman of the Division of Physical Sciences.
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; Ph.D., Yale University, 1917; D.Sc. (hon.), Ohio Northern University, 1927.
- M. MARIE MOUNT**, Dean of the College of Home Economics.
B.A., University of Indiana, 1916; M.A., Columbia Teachers College, 1924.
- ROGER HOWELL**, Dean of the School of Law.
B.A., Johns Hopkins University, 1914; Ph.D., 1917; LL.B., University of Maryland, 1917.
- WILLIAM S. STONE**, Dean of the School of Medicine and Director of Medical Education and Research.
B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; Ph.D., (hon.), University of Louisville, 1946.
- FLORENCE M. GIPE**, Dean of the School of Nursing.
B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; Ed.D., University of Maryland, 1952.
- CLIFFORD G. BLITCH**, Director of the University Hospital.
M.D., Vanderbilt University Medical School, 1928.

- EDWARD BARBER**, Dean of the College of Military Science.
B.S., Massachusetts Institute of Technology, 1935; M.A., Georgetown University, 1956; Brigadier General, U.S. Air Force.
- NOEL E. FOSS**, Dean of the School of Pharmacy.
Ph.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; Ph.D., 1933.
- LESTER M. FRALEY**, Dean of the College of Physical Education, Recreation, and Health.
B.A., Randolph-Macon College, 1928; M.A., 1937; Ph.D., Peabody College, 1939.
- RAY W. EHRENSBERGER**, Dean of the College of Special and Continuation Studies.
B.A., Wabash College, 1929; M.A., Butler University, 1930; Ph.D., Syracuse University, 1937.
- GEARY F. EPPLEY**, Director of Student Welfare and Dean of Men.
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- ADELE H. STAMP**, Dean of Women.
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.
- G. WATSON ALGIRE**, Director of Admissions and Registrations.
B.A., University of Maryland, 1930; M.S., 1931.
- NORMA J. AZLEIN**, Registrar.
B.A., University of Chicago, 1940.
- DAVID L. BRIGHAM**, Alumni Secretary.
B.A., University of Maryland, 1938.
- WILLIAM W. COBEY**, Director of Athletics.
A.B., University of Maryland, 1930.
- GEORGE O. WEBER**, Director and Supervising Engineer, Department of Physical Plant.
B.S., University of Maryland, 1933.
- GEORGE W. MORRISON**, Associate Director and Supervising Engineering Physical Plant. (Baltimore).
B.S., University of Maryland, 1927; E.E., 1931.
- C. WILBUR CISSEL**, Director of Finance and Business.
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
- HOWARD ROVELSTAD**, Director of Libraries.
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.
- GEORGE W. FOGG**, Director of Personnel.
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MCCARTNEY**, Director of Publications, Director of University Relations.
B.A., University of Massachusetts, 1941.
- HARRY A. BISHOP**, Director of the Student Health Service.
M.D., University of Maryland, 1912.
- ROBERT E. KENDIG**, Professor of Air Science and Commandant of Cadets, Air Force R.O.T.C.
A.B., William and Mary College, 1939.

DIVISION CHAIRMEN

- CHARLES E. WHITE**, Chairman of the Lower Division.
B.S., University of Maryland, 1923; M.S., 1924; Ph.D., 1926.
- JOHN E. FABER, JR.**, Chairman of the Division of Biological Sciences.
B.S. University of Maryland, 1926; M.S., 1927; Ph.D., 1937.
- ADOLF E. ZUCKER**, Chairman of the Division of Humanities.
B.A., University of Illinois, 1912; M.A., 1913; Ph.D., University of Pennsylvania, 1917.
- HAROLD C. HOF SOMMER**, Chairman of the Division of Social Sciences.
B.S., Northwestern University, 1921; M.A., 1923; Ph.D., Cornell University, 1929.



UNIVERSITY OF MARYLAND



COLLEGE PARK CAMPUS

1957

BUILDING CODE LETTERS FOR CLASS SCHEDULES

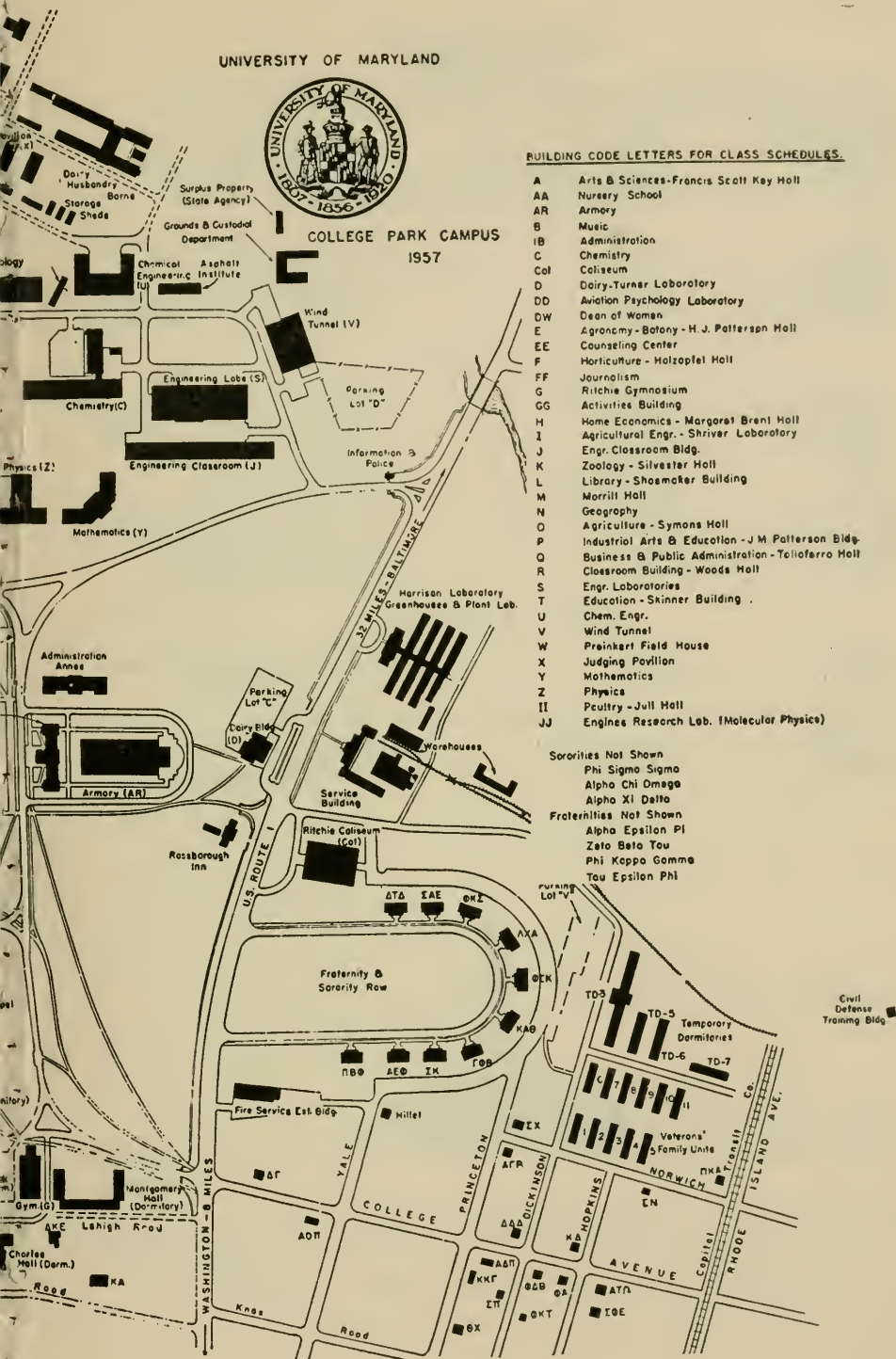
A	Arts & Sciences-Francis Scott Key Hall
AA	Nursery School
AR	Armory
B	Music
IB	Administration
C	Chemistry
Col	Coliseum
D	Dairy-Turner Laboratory
DD	Aviation Psychology Laboratory
DW	Dean of Women
E	Agronomy-Botany-H.J. Patterson Hall
EE	Counseling Center
F	Horticulture-Holzappel Hall
FF	Journalism
G	Ritchie Gymnasium
GG	Activities Building
H	Home Economics-Margaret Brent Hall
I	Agricultural Engr.-Shriver Laboratory
J	Engr. Classroom Bldg.
K	Zoology-Silvester Hall
L	Library-Shoemaker Building
M	Morrill Hall
N	Geography
O	Agriculture-Symons Hall
P	Industrial Arts & Education-J.M. Patterson Bldg.
Q	Business & Public Administration-Tellaferra Hall
R	Classroom Building-Woods Hall
S	Engr. Laboratories
T	Education-Skinner Building
U	Chem. Engr.
V	Wind Tunnel
W	Preinkert Field House
X	Judging Pavilion
Y	Mathematics
Z	Physics
II	Poultry-Jull Hall
JJ	Engines Research Lab. (Molecular Physics)

Sororities Not Shown

Phi Sigma Sigma
Alpha Chi Omega
Alpha Xi Delta

Fraternities Not Shown

Alpha Epsilon Pi
Zeta Beta Tau
Phi Kappa Gamma
Tau Epsilon Phi



1957-58 CALENDAR

First Semester

1957

September 17-20
September 23
November 27
December 2
December 21

Tuesday-Friday
Monday
Wednesday after last class
Monday, 8 A.M.
Saturday after last class

Registration, first semester
Instruction begins
Thanksgiving recess begins
Thanksgiving recess ends
Christmas recess begins

1958

January 6
January 20
January 21
January 22-29

Monday, 8 A.M.
Monday
Tuesday
Wednesday-Wednesday, inc.

Christmas recess ends
Charter Day
Pre-Examination Study Day
First Semester examinations

Second Semester

February 4-7
February 10
February 22
March 25
April 3
April 8
May 15
May 28
May 29-June 6
May 30
June 1
June 7

Tuesday-Friday
Monday
Saturday
Tuesday
Thursday after last class
Tuesday, 8 A.M.
Thursday
Wednesday
Thursday-Friday, inc.
Friday
Sunday
Saturday

Registration, second semester
Instruction begins
Washington's birthday, holiday
Maryland Day
Easter recess begins
Easter recess ends
Military Day
Pre-Examination Study Day
Second Semester examinations
Memorial Day, holiday
Baccalaureate exercises
Commencement exercises

Summer Session, 1958

June 23
June 24
August 1

Monday
Tuesday
Friday

Registration, Summer Session
Summer Session begins
Summer Session ends

Short Courses

June 16-21
August 4-9
September 2-5

Monday-Saturday
Monday-Saturday
Tuesday-Friday

Rural Women's Short Course
4-H Club Week
Firemen's Short Course



College of BUSINESS AND PUBLIC ADMINISTRATION

STAFF

J. Freeman Pyle, Ph.D., Dean

James H. Reid, M.A., Assistant Dean

FRANK O. AHNERT, Assistant Professor of Geography.

Dr. Phil., Heidelberg University, 1953.

FRANCIS J. ALBERTS, Assistant Professor of Industrial Management and Personnel.

A.B., University of Rochester, 1947; M.S., 1950; Ph.D., New York University, 1956.

ALBERT L. ALFORD, Instructor in Government and Politics.

A.B., University of Akron, 1948; A.M., Princeton, 1951; Ph.D., 1953.

THORNTON H. ANDERSON, Assistant Professor of Government and Politics.

A.B., University of Kentucky, 1937; M.A., 1938; Ph.D., University of Wisconsin, 1948.

JOHN P. AUGELLI, Associate Professor of Geography.

B.A., Clark University, 1943; M.A., Harvard, 1949; Ph.D., 1951.

GEORGE A. BELL, Research Associate, Bureau of Governmental Research.

A.B., University of Newark, 1936; M.A., New Jersey State Teachers College, 1940; Ph.D., University of Michigan, 1955.

ARNOLD BREKKE, Associate Professor of Economics.

B.S., University of Minnesota, 1942; Ph.D., 1952.

CARTER R. BRYAN, Instructor of Journalism.

B.A., University of California, 1937; Ph.D., University of Vienna, Austria, 1940.

FRANKLIN L. BURDETTE, Professor of Government and Politics, and Director of Bureau of Governmental Research.

A.B., Marshall College, 1934; M.A., University of Nebraska, 1935; M.A., Princeton, 1937; Ph.D., 1938.

CARL L. BUTLER, Instructor in Business Organization.

B.S., University of Denver, 1949; M.B.A., Northwestern University, 1950.

CHARLES E. CALHOUN, Professor of Finance.

A.B., University of Washington, 1925; M.B.A., 1930.

ROBERT G. CAREY, Assistant Professor of Journalism.

A.B., Westminster, 1950; A.M., University of Pittsburgh, 1954.

ELI W. CLEMENS, Professor of Business Administration.

B.S., Virginia Polytechnic Institute, 1930; M.S., University of Illinois, 1934; Ph.D., University of Wisconsin, 1940.

ROBERT R. CLUSE, Instructor in Statistics.

B.B.A., 1951, M.A., 1952, University of Miami.

J. ALLAN COOK, Professor of Marketing.

B.A., William and Mary, 1928; M.B.A., Harvard, 1936; Ph.D., Columbia, 1947.

JOHN H. COVER, Professor and Director of Bureau of Business and Economic Research.

B.S., Columbia, 1915; A.M., 1919; Ph.D., 1927.

ALFRED A. CROWELL, Professor and Head of Department of Journalism and Public Relations.

A.B., University of Oklahoma, 1929; M.A., 1934; M.S.J., Northwestern, 1940.

JOHN H. CUMBERLAND, Associate Professor and Assistant Director of Business and Economic Research.

B.A., Maryland, 1947; M.A., Harvard, 1949; Ph.D., 1951.

JOHN A. DAIKER, Assistant Professor of Accounting.

C.P.A., District of Columbia, 1949; B.S., University of Maryland, 1941; M.B.A., 1951.

JOHN H. DALTON, Assistant Professor of Economics.

A.B., University of California, 1943; Ph.D., 1955.

ALFRED DANEGGER, Assistant Professor of Press Photography, University Photographer.

B.S., University of Maryland, 1950.

TOWNES L. DAWSON, Associate Professor of Business Law.

B.B.A., University of Texas, 1943; B.S., U. S. Merchant Marine Academy, 1946;

M.B.A., University of Texas, 1947; Ph.D., 1950; LL.B., 1954.

ERNEST H. DAY, Instructor in Economics.

A.B., Oberlin College; LL.B., George Washington, 1950; M.A., 1955.

DUDLEY DILLARD, Professor and Head of Department of Economics.

B.S., University of California, 1935; Ph.D., 1940.

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A.B., Cornell, 1948; M.A., Harvard, 1951.

CHARLES B. EDELSON, Instructor in Accounting.

R.B.A., University of New Mexico, 1949; M.B.A., Indiana University, 1950; C.P.A., Maryland, 1951.

LYNN R. EDMISTER, Lecturer in Economics.

A.B., Harvard, 1916; Ph.D., Brookings Institution, 1930.

ALLAN J. FISHER, Professor of Accounting and Finance.

B.S., Wharton School of Finance and Commerce, 1928; Litt.M., University of Pittsburgh, 1936; Ph.D., 1937.

JOHN H. FREDERICK, Professor and Head of Department of Business Organization.

B.S., Wharton School of Finance and Commerce, 1918; M.A., University of Pennsylvania, 1925; Ph.D., 1927.

HAROLD FREEMAN, Assistant Instructor of Office Techniques.

B.S., Wilson Teachers College, 1953; M.Ed., University of Maryland, 1956.

DWIGHT L. GENTRY, Associate Professor of Marketing.

A.B., Elon College, 1941; M.P.A., Northwestern, 1947; Ph.D., University of Illinois, 1952.

GEORGE GERA, Instructor in Office Techniques and Management.

B.S., Bloomsburg State Teachers, 1949; M.A., Columbia, 1951.

PHILIP C. GERACI, Instructor in Press Photography.

B.S., University of Maryland, 1953.

HENRY W. GRAYSON, Associate Professor of Economics.

B.A., University of Saskatchewan, 1937; M.A., University of Toronto, 1947; Ph.D., 1950.

ALLEN G. GRUOHY, Professor of Economics.

B.A., University of British Columbia, 1926; M.A., McGill, 1928; Ph.D., University of Virginia, 1931.

JOHN G. GURLEY, Associate Professor of Economics.

B.A., Stanford, 1942; Ph.D., 1951.

DANIEL HAMBERG, Associate Professor of Economics.

B.S., University of Pennsylvania, 1945; M.A., 1947; Ph.D., 1952.

HORACE V. HARRISON, Assistant Professor of Government and Politics.

B.A., Trinity, Texas, 1932; M.A., University of Texas, 1941; Ph.D., 1951.

GUY B. HATHORN, Assistant Professor of Government and Politics.

B.A., University of Mississippi, 1940; M.A., 1942; Ph.D., Duke, 1950.

DONALD C. HESTER, Instructor in Government and Politics.

B.A., Blufton College, 1943; M.A., Ohio State University, 1944.

CHARLES F. HEYE, Instructor in Business Organization.

B.B.A., University of Texas, 1943; M.B.A., University of Maryland, 1947.

ROBERT S. HIMES, Instructor in Accounting.

B.C.S., Benjamin Franklin University, 1939; M.C.S., 1940; B.S., American University, 1951; M.B.A., 1955.

WALTER V. HOHENSTEIN, Instructor in Government and Politics.

B.A., Winona State Teachers College, 1950; M.A., University of Minnesota, 1951; Ph.D., 1956.

DAVID J. M. HOOSON, Assistant Professor of Geography.

B.A., Oxford University, England, 1948; M.A., Oxford University, England, 1950; B.Sc. (Econ.), London University, England, 1951; Ph.D., London University, England, 1955.

CHARLES Y. HU, Professor of Geography.

B.S., University of Nanking, China, 1930; M.A., University of California, 1936; Ph.D., University of Chicago, 1941.

ARTHUR E. KARINEN, Assistant Professor of Geography.

B.A., University of California, 1944; M.A., 1948.

DONALD W. KRIMEL, Associate Professor of Public Relations.

B.Ed., Illinois State Teachers, 1941; Ph.M., University of Wisconsin, 1946; Ph.D., 1955.

LEROY L. LEE, Assistant Professor of Accounting.

A.B., George Washington University, 1948; C.P.A., Maryland, 1949; A.M., George Washington, 1952.

ERNEST W. LEFEVER, Instructor in Government and Politics.

A.B., Elizabethtown College, 1942; B.D., Yale University, 1945; Ph.D., 1956.

HOYT LEMONS, Lecturer in Geography.

B.Ed., Southern Illinois University, 1936; M.A., University of Nebraska, 1938; Ph.D., 1941.

RICHARD L. LYONS, Lecturer in Journalism and Public Relations.

B.A., Wesleyan, 1943; M.A., Harvard, 1947.

BRUCE W. MACY, Research Associate, Bureau of Business and Economic Research.

B.S., Iowa State College, 1952; M.S., 1954.

F. WEBSTER MCBRYDE, Lecturer in Geography.

B.A., Tulane, 1930; Ph.D., University of California, 1940.

WALTER M. MEASDAY, Assistant Professor of Economics.

A.B., William and Mary, 1945; Ph.D., Massachusetts Institute of Technology, 1955.

EDMUND C. MESTER, Lecturer in the Department of Government and Politics and Executive Secretary of Maryland Municipal League.

A.B., University of Maryland, 1948; M.A. 1949.

EARL W. MOUNCE, Professor of Law and Labor.

B.S., University of Missouri, 1921; M.A., 1922; A.B., 1927; LL.B., 1929; LL.M., University of Southern California, 1945.

WALTER F. MUHLBACH, Lecturer in Industrial Management.

Ph.B., University of Chicago, 1921; M.A., Ohio State University, 1925.

BOYD L. NELSON, Assistant Professor of Business Administration.

B.A., University of Wisconsin, 1947; M.A., 1948; Ph.D., 1952.

HONORA M. NOYES, Instructor in Office Techniques.

B.A., George Washington, 1934; M.Ed., University of Pittsburgh, 1939.

JANE H. O'NEILL, Instructor in Office Techniques.

B.A., University of Maryland, 1932.

ARTHUR S. PATRICK, Associate Professor of Office Management and Business Education.

B.S., Wisconsin State College, 1931; M.A., University of Iowa, 1940; Ph.D., American University, 1956.

DONALD J. PATTON, Lecturer of Geography.

S.B., Harvard, 1942; M.A., 1946; Ph.D., 1949.

JOE K. PHIPPS, Lecturer in Journalism.

B.A., Trinity University, Texas, 1940; M.A., University of Texas, 1950.

ELMER PLISCHKE, Professor and Head of Department of Government and Politics.

Ph.B., Marquette, 1937; M.A., American University, 1938; Ph.D., Clark University, 1943.

J. FREEMAN PYLE, Professor of Marketing and Economics and Dean of College of Business and Public Administration.

Ph.B., University of Chicago, 1917; M.A., 1918; Ph.D., 1925.

JAMES H. REID, Professor of Marketing and Assistant Dean of College of Business and Public Administration.

B.S., University of Iowa, 1923; M.A., American University, 1933.

VICTOR ROTERUS, Consulting Professor of Geography.

Ph.B., University of Chicago, 1930; M.S., 1931.

G. DONALD SHELBY, Assistant Professor in Economics.

B.A., University of Cincinnati, 1947; Ph.D., University of California, 1955.

ANTHONY SAS, Instructor in Geography.

B.A., University of Amsterdam, 1947; M.A., University of Washington, 1951.

SPENCER M. SMITH, Assistant Professor of Economics.

B.A., University of Iowa, 1941; M.A., 1942; Ph.D., 1948.

REUBEN G. STEINMEYER, Professor of Government and Politics.

A.B., American University, 1929; Ph.D., 1935.

CHARLES T. SWEENEY, Professor of Accounting.

B.S., Cornell, 1921; M.B.A., University of Michigan, 1928; C.P.A., Iowa, 1934 Ohio, 1936.

CHARLES A. TAFF, Professor of Transportation.

B.S., University of Iowa, 1937; M.A., 1941; Ph.D., University of Maryland, 1952.

JOHN L. TIERNEY, Lecturer in Industrial Management and Personnel.

A.B., University of Minnesota, 1929; LL.B., University of Wisconsin, 1938; LL.M., George Washington, 1956.

WILHELMUS A. M. VAN EEKEREN, Instructor in Government and Politics.

LL.B., University of Amsterdam, 1951; M.A., University of Oregon, 1952; Ph.D., Georgetown University, 1956.

WILLIAM VAN ROYEN, Professor and Head of Department of Geography.

M.A., Rijksuniversiteit Utrecht, 1925; Ph.D., Clark University, 1928.

J. DONALD WATSON, Professor of Finance.

B.A., Reed College, 1926; M.B.A., University of Michigan, 1931; C.L.U., American College of Life Underwriters, 1940; Ph.D., Northwestern, 1941.

SIVERT M. WEDEBERG, Professor of Accounting.

B.B.A., University of Washington, 1925; C.P.A., Maryland, 1934; A.M., Yale, 1935.

NORMAN WENGERT, Professor of Government and Politics.

B.A., University of Wisconsin, 1938; M.A., Fletcher School, 1939; LL.B., University of Wisconsin, 1942; Ph.D., 1947.

CLAYTON E. WHIPPLE, Consulting Professor of Geography.

B.S., Cornell, 1925; M.S., 1932; Ph.D. (HONS), Univ. of Salonika, Greece, 1949

HOWARD W. WRIGHT, Professor of Accounting.

B.S., Temple, 1937; M.A., University of Iowa, 1940; C.P.A., Texas, 1940; Ph.D., University of Iowa, 1947.

LELAND B. YEAGER, Assistant Professor of Economics.

A.B., Oberlin, 1948; M.A., Columbia, 1949; Ph.D., 1952.

MEMBERS TEACHING ABROAD

ROSCOE BAKER, Ph.D., Assistant Professor of Government and Politics.

JAMES D. BLICK, Ph.D., Assistant Professor of Geography.

JOHN A. BOTTOMLEY, M.A., Instructor in Economics.

LESLIE R. BUNDGAARD, Ph.D., Assistant Professor of Government and Politics.

ROBERT Y. DURAND, M.B.A., Instructor in Business Administration.

WILLIAM A. DYMSZA, Ph.D., Assistant Professor of Economics.

KURT GLASER, Ph.D., Assistant Professor of Government and Politics.

JOHN D. HALL, Ph.D., Assistant Professor of Government and Politics.

WILLIAM ROY HAMILTON, M.A., Instructor in Government and Politics.

WAYNE W. HEISER, M.A., Instructor in Geography.

CHARLES P. KRETZSCHMAR, M.A., Instructor in Economics.

THOMAS J. LEARY, Ph.D., Instructor in Economics.

THEODORE MCNELLY, Ph.D., Assistant Professor of Government and Politics.

AURELIUS MORGNER, Ph.D., Associate Professor of Economics.

EDWARD R. PADGETT, M.A., Instructor in Government and Politics.

ROBERT HANEY SCOTT, M.A., Instructor in Economics.

JOHN M. STREET, B.A., Instructor in Geography.

DONALD E. TOTEN, M.S., Instructor in Geography, and Assistant to Director.

JOHN H. WARKENTIN, M.A., Instructor in Geography.

RICHARD B. WILSON, Ph.D., Assistant Professor of Government and Politics.

COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

JOHN FREEMAN PYLE, Ph.D., *Dean*JAMES H. REID, M.A., *Assistant Dean*

THE University of Maryland is in an unusually favorable location for students of Business, Government and Politics, Economics, Public Administration, Geography, Journalism and Public Relations, Foreign Service and International Relations. Downtown Washington is only twenty-five minutes away in one direction, while the Baltimore business district is less than an hour in the other. There is frequent transportation service from College Park to each city. Special arrangements are made to study commercial, manufacturing, exporting, and importing agencies and methods in Baltimore. Assistance is given qualified students who wish to obtain a first-hand glimpse of the farflung economic activities of the national government or to utilize the libraries, government departments, and other facilities available in Washington.

ORGANIZATION

The College comprises seven departments and two bureaus of research.

I. Department of Business Organization and Administration

1. Accounting and Statistics
2. Financial Administration
3. Industrial Administration
4. Insurance and Real Estate
5. Marketing Administration
 - (a) Advertising
 - (b) Foreign Trade
 - (c) Retail Store Management
 - (d) Sales Management
6. Personnel Administration
7. Transportation Administration
 - (a) Airline and Airport Management
 - (b) Traffic Management
8. Public Administration

II. Department of Economics

III. Department of Foreign Service and International Relations

IV. Department of Geography

V. Department of Government and Politics

VI. Department of Journalism and Public Relations

VII. Department of Office Techniques and Management

1. Office Management
2. Office Techniques

VIII. Bureau of Business and Economic Research

IX. Bureau of Governmental Research

X. Maryland Municipal League (Affiliated)

Aims

The College of Business and Public Administration offers courses designed to prepare young men and women for service in business firms, governmental agencies, cooperative enterprises, labor unions, publishing firms, small business units, and other organizations requiring effective training in administrative skills and techniques, and for the teaching of business subjects, economics, geography, government and politics, and journalism and public relations in high schools and colleges. It supplies scientific training in administration to students and prospective executives on a professional basis comparable to university training in the other professional fields. Administration is regarded as a profession. The College of Business and Public Administration offers its students courses of instruction which present general principles and techniques of management and administration and brings together in systematic form the experiences and practices of business firms and governmental units. This plan of education does not displace practical experience, but supplements and strengthens it by shortening the period of apprenticeship otherwise necessary, and by giving a broad and practical knowledge of the major principles, policies, and methods of administration.

During the first half of the college study program the student secures a broad foundation upon which to base the professional and the more technical courses offered in the last half of the curriculum. The managerial and operating points of views are stressed in the advanced courses in production, marketing, labor, finance, real estate, insurance, accounting, office management and public administration. The purpose of the work offered is to aid the student as a prospective executive in developing his ability to identify and to solve administrative and managerial problems; and to adjust himself and his organization, policies and practices to changing social, political and economic situations.

The aim of the college is to present and illustrate such sound principles of management as are applicable to both big business and small business. Large-scale business, because of its possible economies, will be expanded in some industries under certain well-known conditions. There are, on the other hand, industries and many situations which still call for the small business. If these small-scale businesses are to be operated with profit to the owners and with satisfactory and economical service to the public, it is imperative that authentic principles of administration be applied to them. Sound principles of ethical conduct are emphasized at all times throughout the various courses.

The primary aim of collegiate education for government and business services is to prepare for effective management. The College of Business and Public Administration, University of Maryland, was established to supply effective education in administration to the young men and women whose task

will be the guiding of the more complex business enterprises and governmental units resulting from industrial, social and political development and expansion.

Graduation Requirement

A minimum of 120 semester hours of credit with an average of "C" in courses suggested by the College in addition to the specified courses in military science, physical activities and hygiene are required for graduation. A minimum of 57 semester hours of the required 120 hours must be in upper division courses. The student is required to have an average of "C" for courses used in meeting the quantitative graduation requirements. The time required to complete the requirements for the bachelor's degree for the average student is eight semesters. A superior student, by carrying more than the average load, can complete the work in a shorter period of time.

THE PROGRAM IN AMERICAN CIVILIZATION

The University considers that it is important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American Civilization. This program is also designed to provide the student with a general educational background.

Work in American Civilization is offered at three distinct academic levels. The first level is required of all freshmen and sophomores at the University and is described below. The second level is for undergraduate students wishing to carry a major in this field (see catalog for the College of Arts and Sciences). The third level is for students desiring to do graduate work in this field (see catalog for the Graduate School).

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the Program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

The 24 semester hours in American Civilization are as follows:

1. English (12 hours, Eng. 1, 2 and 3, 4 or 5, 6), American History (6 hours, Hist. 5, 6), and American Government (3 hours, G. & P. 1) are required subjects; however, students who qualify in one, two or all three of these areas by means of University administered tests are expected to substitute certain elective courses. Through such testing a student may be released from 3 hours of English (9 hours would remain an absolute requirement), 3 hours of American History (3 hours remaining as an absolute requirement), and 3 hours of American Government. Students released from 3 hours of English will ordinarily take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in History will ordinarily take Hist. 56 instead of Hist. 5 and 6.

2. For the 3 additional hours of the 24 hours required, students in the College of Business and Public Administration elect one course from the following group (Elective Group I):

Economics 31, Principles of Economics I (Not open to Freshmen).

Philosophy 1, Philosophy of Modern Man

Sociology 1, Sociology of American Life

Students enrolled in the College of Business and Public Administration will normally meet this requirement by taking Economics 31 in the Sophomore year.

3. Students who, on the basis of tests, have been released from 3, 6 or 9 hours in otherwise required courses in English, American History or American Government (see 1 above), shall select the replacements for these courses from any or all of the following groups: (a) more advanced courses in the same department as the required courses in which the student is excused, or (b) Elective Group I (see 2 above), provided that the same course may not be used as both a Group I and a Group II choice, or (c) Elective Group II. Group II consists of the following 3-hour courses:

History 2, History of Modern Europe; either History 51 or 52, The Humanities; either Music 20, Survey of Music Literature or Art 22, History of American Art; Psychology 1, Introduction to Psychology; and Sociology 5, Anthropology.

Degrees

The University confers the following degrees on students of Business and Public Administration: Bachelor of Science, Master of Business Administration, Master of Arts, and Doctor of Philosophy. The College has a number of graduate assistantships in Business Administration, Economics, Geography, Journalism and Public Relations, Government and Politics, and Bureau of Business and Economic Research available for qualified graduate students. Applications for these assistantships should be made directly to the Dean of the College of Business and Public Administration. (See bulletin of Graduate School for graduate rules and regulations.)

Each candidate for a degree must file in the office of the Registrar on a date announced for each semester a formal application for a degree. Candidates for degrees must attend a convocation at which degrees are conferred and diplomas are awarded. Degrees are conferred in absentia only in exceptional cases.

Junior Requirement

To be classified as a junior a student must have earned 56 semester hours of his freshman and sophomore requirements with an average of at least "C", plus the required work in military science, hygiene and physical activities for the freshman and sophomore years. If a student has better than a "C" average and lacks a few credits of having the total of 56, he may be permitted

to take certain courses numbered 100 and above providing he has the prerequisites for these courses and the consent of the Dean.

Senior Residence Requirement

After a student has earned acceptable credit to the extent of 90 semester hours exclusive of the required work in military science, physical activities, and hygiene, either at the University of Maryland or elsewhere, he must earn a subsequent total of at least 30 semester hours with an average grade of "C" or better at the University of Maryland. No part of these credits may be transferred from another institution. Specific requirements for graduation in the selected curriculum must be met.

Programs of Study

The College offers programs of study in economics, business administration, office techniques, office management, public administration, government and politics, geography, journalism and public relations, and some combination curriculums, e.g., business administration and law, commercial teaching and industrial education. Research is emphasized throughout the various programs.

Professional Objectives

The executive manager or administrator in modern business enterprises and governmental units and agencies should have a clear understanding of:

(a) the business organizations and institutions which comprise the modern business world;

(b) the political, social, and economic forces which tend to limit or to promote the free exercise of his activities; and

(c) the basic principles which underlie the efficient organization and administration of a business or governmental enterprise.

In addition, the executive or the prospective executive should:

(a) be able to express his thoughts and ideas in correct and concise English;

(b) have some useful knowledge of the physical world in which he operates.

(c) have a knowledge of the development of modern civilization through a study of history, government, economics, and other social studies;

(d) have a sympathetic understanding of people gained through a study of sociology, geography, politics, labor relations, marketing, and other subjects.

If the executive is to be successful in solving current and future business and governmental problems, he should be skilled in the scientific method of collecting, analyzing, and classifying pertinent facts in the most significant manner, and then, on the basis of these facts, be able to draw sound conclusions

and to formulate general principles which may be used to guide his present and future professional or vocational conduct. In other words, probably the most important qualities in a successful executive are:

(a) the ability to arrive at sound judgments;

(b) the capacity to formulate effective plans and policies, and the imagination and ability to devise organizations, methods, and procedures for executing them.

Facilities Furnished

The teaching staff and the curriculums of the College of Business and Public Administration have been selected and organized for the purpose of providing a type of professional and technical training that will aid the capable and ambitious student in developing his potential talents to their full capacity.

The college study program on both the undergraduate and graduate levels presuppose effective training in English, history, government, science, and mathematics.* The program of study for any individual student may be so arranged as to meet the needs of those preparing for specific lines of work, such as accounting, advertising, banking, foreign trade, industrial administration, marketing administration, personnel administration, office management, real estate practice, insurance, journalism, public relations, government employment, office techniques, teaching, and research.

Military Instruction

All male students unless specifically exempted under University rules are required to take basic air force ROTC training for a period of two years. The successful completion of this course is a prerequisite for graduation but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of military training will be required to complete the course or take it until graduation whichever occurs first.

Selected students who meet the requirements of the Military Department may carry advanced Air Force ROTC courses during their Junior and Senior years and may receive, under conditions determined by the Military, a regular or reserve commission in the United States Air Force.

Costs

Actual annual costs of attending the University include: \$165.00 fixed charges; \$75.00 special fees; \$400.00 board; \$140 to \$170 lodging for Maryland residents, or \$180 or \$220 for residents of other States and Countries; and lab-

*The major portion of this training is usually secured in the four years of high school and the first two years of college.

oratory fees which vary with the laboratory course pursued. A matriculation fee of \$10.00 is charged all new students. A charge of \$250.00 is assessed to all students who are non-residents of the State of Maryland.

For a more detailed statement of costs, write to the Director of Publications for a copy of the "General Information Issue" of the Catalog.

Admissions

All students desiring to enroll in the College of Business and Public Administration must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students more emphasis will be placed upon good marks and other indications of probable success in college than upon a fixed pattern of subject matter. In general, four units of English and one unit each of Social Studies and Natural Sciences are required. One unit each of Algebra and Plane Geometry is desirable. While Foreign Language is desirable for certain programs no Foreign Language is required for entrance. Fine Arts, Trade and Vocational subjects are acceptable as electives.

For a more detailed statement of admissions, write to the Director of Publications for a copy of the "General Information" catalog.

HONORS AND AWARDS

The Dean's list of Distinguished Students. Any student who has passed at least 14 hours of work in the preceding semester, without failure of any course, and with an average grade on all courses of at least 3.5, will be placed on the Dean's List of Distinguished Students. This list is posted in the office of the Dean of the College.

Beta Gamma Sigma. The Alpha of Maryland Chapter of Beta Gamma Sigma was chartered in 1940. The purpose of this honorary society is to encourage and reward scholarship and accomplishment among students of commerce and business administration; to promote the advancement of education in the art and science of business; and to foster integrity in the conduct of business operations. Chapters of Beta Gamma Sigma are chartered only in schools holding membership in the American Association of Collegiate Schools of Business. Third and fourth year students in business administration are eligible; if in his third year, a student must rank in the highest four per cent of his class; and if in his fourth year, he must rank in the highest ten per cent in order to be considered for selection.

The Delta Sigma Pi Scholarship Key is awarded annually to the student who has maintained the highest scholastic standing during the entire course of study in business administration or economics.

Delta Sigma Pi was founded at New York University on November 7, 1907. The Gamma Sigma of Maryland chapter was chartered at the University of Maryland in 1950. Delta Sigma Pi is a professional fraternity organized to foster the study of business in universities; to encourage scholarship, social activity, and the association of students for their mutual advancement by research and practice; to promote closer affiliation between the commercial world and students of commerce; and to further a high standard of commercial ethics and culture, as well as the civic and commercial welfare of the community. Members are selected from the College of Business and Public Administration on the basis of leadership, scholastic standing, and promise of future business success.

The Pi Sigma Alpha Fred Hays Memorial Award in Government and Politics is awarded annually by the Department of Government and Politics to the graduating senior who earns the highest grades among the majors in Government and Politics of the graduating class. The award is a cash award, not less than \$25.00, provided by an anonymous alumnus. This award is named in memory of Fred Hays, an honor graduate and former student president of Pi Sigma Alpha, the honorary Political Science fraternity. Fred Hays was killed in action in Korea.

The Alumni Association of the University provides a scholarship of \$250.

Baltimore Sunpapers Scholarship in Journalism. The Board of Trustees of the A. S. Abell Foundation, Inc. has contributed \$500 to provide a scholarship in journalism to be awarded to a worthy senior in the College of Business and Public Administration who is majoring in editorial journalism.

The Maryland Motor Truck Association, Inc. provides an award of \$500 annually to a student concentrating in transportation who is registered in the College of Business and Public Administration.

The Davidson Transfer and Storage Co. gives an award of \$500 to a capable student in the College who is concentrating in transportation.

Pilot Freight Carriers, Inc. provides a \$500 award to a senior in the College of Business and Public Administration who is concentrating in transportation with a major interest in motor transportation.

The Maryland Association of Certified Public Accountants makes available a scholarship of \$200 for an outstanding student in accounting who is registered in the College.

STUDY PROGRAMS IN THE COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

A student in the College can so arrange his grouping and sequence of courses as to form a fair degree of concentration in one of the Departments. When, however, he wishes to become a *specialist* in any one of the depart-

ments, he should plan to continue his subjects on to the graduate level, working toward either the Master's or the Doctor of Philosophy degree.

I. BUSINESS ORGANIZATION AND ADMINISTRATION

Business organizations are set up primarily for the purpose of *producing* and *distributing* goods and services. Modern business administration requires a knowledge of and skill in the use of effective tools for the control of organizations, institutions, and operations. The curriculums of the Department of Business Organization and Administration emphasize the principles and problems of the development and the use of policies and organizations, and the methods, techniques and procedures of execution, in other words, the essence of Administration and Management.

Study Programs in the Department

The programs of study in the Department of Business Organization and Administration are so arranged as to facilitate concentrations according to the major functions of business organization. This plan is not, however, based on the assumption that these major divisions are independent units, but rather that each is closely related and dependent on the others. Every student in Business Administration, therefore, is required to complete satisfactorily a minimum number of required basic subjects in economics and in each of the major functional fields. Each graduate upon completion of the requirements for the bachelor's degree finds himself well grounded in the theory and practice of administration. There are five commonly recognized major business functions, viz: production, marketing, finance, labor relations, and control.

The function of control may be thought of as comprising two sectors, viz. internal and external. Internal control has to do with men, materials, and operations. External control is secured through the force of laws, and court, board and commission decisions, also through the influence of custom and public opinion. Management endeavors to make adequate adjustments to these forces. Courses in law and public administration, for example, aid in giving the students an understanding of the problems, devices, and methods of external or "social" control.

Freshman and Sophomore Requirements

During the first half of the program of study each student in the Department of Business Organization and Administration is expected to complete the following basic subjects, except as indicated in a particular curriculum:

Required Courses:	Semester	Hours
Eng. 1, 2—Composition and Readings in American Literature ¹	6	
Eng. 3, 4 or 5, 6—Composition and World or English Literature.....	6	
Math. 5, 6—Mathematics.....	6	
Geog. 1, 2—Economic Resources.....	4	
Econ. 4, 5—Economic Developments.....	4	

B.A. 10, 11—Organization and Control.....	4
G. & P. 1—American Government (or Sociology of American Life) ¹	3
Soc. 1—Sociology of American Life (or American Government) ¹	3
Hist. 5, 6—History of American Civilization ¹	6
B.A. 20, 21—Principles of Accounting.....	8
Speech 18, 19—Introductory Speech	2
Econ. 31, 32—Principles of Economics.....	6
Military Training and Physical Activities for Men.....	16
Health and Physical Activities for Women.....	8
Total specified requirements.....	66 or 74

A minimum of forty per cent of the total number of credits required for graduation must be in subjects with designations other than Business Administration; forty per cent of the required 120 semester hours of academic work must be in Business Administration subjects, the other twenty per cent may be in either group or comprise a combination of the two groups of subjects. An average of "C" in Business Administration courses is required for graduation.

Freshmen who expect to make a concentration in foreign trade, or who plan to enter public service abroad, should elect an appropriate foreign language. If a foreign language is elected, 12 semester hours or the equivalent must be completed with an acceptable grade.

Junior and Senior Requirements

During the junior and senior years each student in the department is required to complete in a satisfactory manner the following specified courses unless the particular curriculum being followed provides otherwise:

Econ. 140—Money and Banking.....	3
B. A. 140—Financial Management.....	3
B. A. 150a—Marketing Principles and Organization.....	3
B. A. 150—Marketing Management.....	3
Econ. 160—Labor Economics.....	3
B. A. 160—Personnel Management.....	3
B. A. 130—Elements of Statistics.....	3
B. A. 180, 181—Business Law I, II.....	8
Total	29

The remaining credits for juniors and seniors may be used to meet the requirements for one of the special concentration programs, for example, in Public Administration, Foreign Service, Commercial Teaching, and in the fields of Business Administration, such as: Accounting and Statistics, Production Administration, Marketing, Advertising, Retailing, Purchasing, Foreign Trade, Transportation, Labor Relations, Real Estate, Insurance, Investment and General Finance. Juniors and seniors may elect appropriate Secretarial Training courses.

¹ See American Civilization Program, page 14.

Combined Administration and Law Program

When a student elects the combination Administration-Law curriculum, he must complete in a satisfactory manner the specific requirements listed for the first three years of the general curriculum in administration plus enough electives to equal a minimum of 92 credits exclusive of military science, physical activities and hygiene, with an average grade of at least "C." The last year of college work before entering the Law School of the University of Maryland must be done in residence at College Park. The Bachelor of Science degree from the College of Business and Public Administration is conferred upon the completion of the first year in the Law School with an average grade of "C" or better. Eligible candidates are recommended for the degree of Bachelor of Science by the College of Business and Public Administration upon the concurrent recommendation of the School of Law, University of Maryland. Business Law cannot be used as credit in this combined curriculum.

Master of Business Administration

Candidates for the degree of Master of Business Administration are accepted in accordance with the procedures and requirements for the Graduate School. See Graduate School Catalog, Section II.

The General Curriculum in Administration

This curriculum is set up on an eight semester basis which corresponds to the traditional four-year course that leads to a bachelor's degree. A student may complete the full course in a shorter period of time by attending summer sessions. A superior student may, however, complete the course in a shorter period of time by carrying a heavier load each semester.

	—Semester—	
	I	II
<i>Freshman Year</i>		
Geog. 1, 2—Economic Resources.....	2	2
Econ. 4, 5—Economic Developments.....	2	2
Eng. 1, 2—Composition and Readings in American Literature ¹ ...	3	3
B. A. 10, 11—Organization and Control.....	2	2
Mathematics 5 and 6.....	3	3
G. & P. 1—American Government ¹	3	...
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Hea. 2, 4—Personal and Community Health (Women).....	2	2
Physical Activities (Men and Women).....	1	1
Elective .....	...	3
Total	18-19	18-19
<i>Sophomore Year</i>		
Eng. 3, 4, or 5—Composition and World or English Literature	3	3
Econ. 31, 32—Principles of Economics.....	3	3
B. A. 20, 21—Principles of Accounting.....	4	4
Speech 18, 19—Introductory Speech.....	1	1
H. 5, 6—History of American Civilization ¹	3	3
Electives (Girls)	3	3
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities (Men and Women).....	1	1
Total	17-18	17-18

¹ See American Civilization Program, page 14.

	—Semester—	
	I	II
<i>Junior Year</i>		
Econ. 140—Money and Banking.....	3	....
B. A. 140—Financial Management.....	....	3
B. A. 130—Elements of Business Statistics.....	3	....
B. A. 150a—Marketing Principles and Organization.....	3	....
B. A. 150—Marketing Management.....	....	3
Econ. 160—Labor Economics.....	3	....
B. A. 160—Personnel Management.....	....	3
Electives in Bus. & Pub. Adm., Economics, or other approved subjects	3	6
Total	15	15
<i>Senior Year</i>		
B. A. 180, 181—Business Law I, II.....	4	4
Econ. 131—Comparative Economic Systems.....	3	....
Econ. 171—Economics of American Industries or B. A. 184—Public Utilities.....	....	3
Econ. 142—Public Finance and Taxation.....	3	....
B. A. 189—Government and Business.....	....	3
Electives in Bus. & Pub. Adm., Economics or other approved subjects	6	6
Total	16	16

Electives may be chosen under the direction of a faculty adviser from courses in Accounting, Statistics, Geography, Public Utilities and Public Administration, Secretarial Training, or other courses that will aid the student in preparing for his major objective. The electives indicated in the General Course are provided so that students can arrange their schedules, under the guidance of a faculty adviser, in such a way as to secure a concentration or major when desired in:

- | | |
|------------------------------|----------------------------------|
| 1. Accounting and Statistics | 5. Marketing Administration |
| 2. Financial Administration | 6. Personnel Administration |
| 3. Industrial Administration | 7. Transportation Administration |
| 4. Insurance and Real Estate | 8. Public Administration |

1. Accounting and Statistical Control Study Program

Internal control in modern business and governmental organizations is a major over-all administrative function. The rapid growth in size and complexity of current governmental units and business enterprises has emphasized the importance of the problems of control in management. In order to control intelligently and effectively the manifold activities of these units, it is necessary to establish an organization, formulate policies, and develop methods of procedures. In order to perform satisfactorily these managerial activities, it is necessary to have pertinent facts concerning the operations of the various units, divisions, and departments. It is the function of the accounting and statistical departments to secure, analyze, classify, and interpret these facts.

This study program is designed to give the student a broad training in administrative control supplemented by specific technical training in the prob-

¹ See American Civilization Program, page 14.

lems, procedures, methods and techniques of accounting and statistics. If the program is followed diligently, the student may prepare himself for a career as a public accountant, tax specialist, cost accountant, auditor, budget officer, comptroller, credit manager, or treasurer.

In order to provide for practical experience arrangements have been made with firms of certified public accountants in Baltimore, New York and the District of Columbia for apprenticeship training in the field of public accounting. This training is provided between semesters of the senior year (approximately January 15 to February 15), and for the semester immediately following graduation. A student may also elect to take one semester of apprenticeship training before graduation.

The following study program provides courses for those wishing to concentrate in this important field:

Students who select a concentration in accounting and statistics follow the general study program in the freshman and sophomore years.

	—Semester—	
	I	II
<i>Junior Year</i>		
B. A. 110, 111—Intermediate Accounting.....	3	3
B. A. 121—Cost Accounting.....	...	4
B. A. 123—Income Tax Accounting.....	4	...
B. A. 130—Elements of Business Statistics.....	...	3
Econ. 140—Money and Banking.....	3	...
B. A. 140—Financial Management.....	...	3
B. A. 150a—Marketing Principles and Organization.....	3	...
B. A. 150—Marketing Management.....	...	3
Elective	3	...
Total	16	16
<i>Senior Year</i>		
Econ. 160—Labor Economics.....	3	...
B. A. 160—Personnel Management.....	...	3
B. A. 124, 126—Advanced Accounting Theory and Practice.....	3	3
B. A. 122—Auditing Theory and Practice.....	3	...
B. A. 127—Advanced Auditing Theory and Practice.....	...	3
B. A. 180, 181—Business Law.....	4	4
Electives	3	3
Total	16	16

The student interested in the field may select such electives, with the aid of his adviser, from the following list of subjects such courses will best meet his needs:

- B. A. 116—Public Budgeting (3)
 B. A. 118—Governmental Accounting (3)
 B. A. 125—C. P. A. Problems (3)*
 B. A. 129—Apprenticeship in Accounting (0)
 B. A. 132, 133—Advanced Business Statistics (3, 3)
 B. A. 141—Investment Management (3)
 B. A. 143—Credit Management (3)
 B. A. 148—Advanced Financial Management (3)
 B. A. 149—Analysis of Financial Statements (3)
 B. A. 165—Office Management (3)
 B. A. 166—Business Communications (3)
 B. A. 184—Public Utilities (3)
 B. A. 210—Advanced Accounting Theory (2-3)
 B. A. 220—Managerial Accounting (3)
 B. A. 221, 222—Seminar in Accounting (arranged) (3)
 B. A. 226—Accounting Systems (3)
 B. A. 228—Research in Accounting (arranged) (3)
 B. A. 229—Studies of special problems in the fields of Control and Organization (arranged) (3)
 Econ. 131—Comparative Economic Systems (3)
 Econ. 132—Advanced Economic Principles (3)
 Econ. 134—Contemporary Economic Thought (3)
 Econ. 142—Public Finance and Taxation (3)

2. Financial Administration

A nation with a highly developed industrial system requires an effective financial organization. Production and marketing activities of business enterprises must be financed; a large volume of consumer purchases depend on credit, and the activities of local, state, and federal government depend, in large part, on taxation and borrowing. To meet these needs a complicated structure of financial institutions, both private and public, has evolved together with a wide variety of financial instruments. The methods used are equally varied and complicated. Since the financing service is so pervasive throughout our economic life and because it is an expense which must be borne by the ultimate purchaser, the management of the finance function is endowed with a high degree of public interest.

This study program is designed to give the student fundamental information concerning financing methods, institutions, and instruments; and to aid him in developing his ability to secure and evaluate pertinent facts, and to form sound judgments with reference to financial matters. Through a wise selection of subjects the student who selects this curriculum may prepare himself for positions in the commercial, savings, and investment banking fields, investment management; corporate financial management; real estate financing; and insurance. A student may qualify himself to enter government service, e.g., in departments regulating banking operations, international finance, the issuance and sales of securities, and a number of financial corporations owned and operated or controlled by the government.

Students wishing to form a concentration in Financial Administration should follow the general study program for the freshman and sophomore years, the program for the junior and senior years is outlined as follows:

*C. P. A. Problems is recommended for students who plan to go into public accounting. Such students should plan their study program so as to meet the professional examination requirements of the State in which they expect to take the examination or to practice.

	—Semester—	
	I	II
<i>Junior Year</i>		
Econ. 140—Money and Banking.....	3	....
B. A. 140—Financial Management.....	....	3
B. A. 130—Elements of Business Statistics.....	....	3
B. A. 110-111—Intermediate Accounting.....	3	3
B. A. 166—Business Communications.....	3	....
B. A. 150a—Marketing Principles and Organization.....	3	....
B. A. 150—Marketing Management.....	....	3
Electives in Economics, Government and Politics, and Business and Public Administration.....	3	4
Total	15	16
<i>Senior Year</i>		
B. A. 180, 181—Business Law.....	4	4
B. A. 141—Investment Management.....	3	....
B. A. 143—Credit Management.....	3	....
B. A. 160—Personnel Management.....	....	3
Econ. 160—Labor Economics.....	3	....
B. A. 148—Advanced Financial Management.....	....	3
Electives	3	6
Total	16	16

Selection of electives may be made with the aid of the adviser from the following list of subjects:

B. A. 123—Income Tax Accounting (4)	B. A. 249—Studies of Special Problems in the Field of Financial Administration (arranged)
Econ. 147—Business Cycles (3)	Econ. 141—Theory of Money, Credit and Prices (3)
B. A. 149—Analysis of Financial State- ments (3)	Econ. 142—Public Finance and Taxation (3)
B. A. 165—Office Management (3)	Econ. 149—International Finance and Ex- change (3)
B. A. 184—Public Utilities (3)	Econ. 241—Seminar in Money, Credit and Prices (arranged)
B. A. 190—Life Insurance (3)	
B. A. 191—Property Insurance (3)	
B. A. 196—Real Estate Finance (3)	
B. A. 240—Seminar in Financial Management (3)	

3. Industrial Administration

This curriculum is designed to acquaint the student with the problems of organization and control in the field of industrial management. Theory and practice with reference to organization, policies, methods, processes, and techniques are surveyed, analyzed, and criticized. The student becomes familiar with the factors that determine plant location and layout, types of buildings, and the major kinds of machines and processes utilized, as well as effective methods and devices for the selection and utilization of men, materials and machines.

The courses, in addition to those required of all students in the college, which will aid the undergraduate student in preparing himself for a useful place in this field of effort are:

- *B. A. 121—Cost Accounting (4)
- B. A. 122, 127—Auditing (3,3)
- B. A. 132, 133—Advanced Business Statistics (3, 3)
- B. A. 153—Purchasing Management (3)
- *B. A. 163—Industrial Relations (3)
- B. A. 165—Office Management (3)
- B. A. 166—Business Communications (3)
- *B. A. 167—Job Evaluation and Merit Rating (2)
- *B. A. 169—Industrial Management (3)
- B. A. 170—Transportation Services and Regulation (3)
- B. A. 171—Industrial and Commercial Traffic Management (3)
- B. A. 172—Motor Transportation (3)
- *B. A. 177—Motion Economy and Time Study (3)
- *B. A. 178—Production Planning and Control (2)
- B. A. 265—Development and Trends in Industrial Management (3)

4. Insurance and Real Estate

Today both insurance and real estate are fields which prefer university trained persons. In insurance, opportunities are available in the home offices and in the field to persons who will ultimately specialize in life, property, or casualty insurance. In real estate, a group of specialist—real estate brokers, appraisers, property managers, and persons handling the financing of real estate—are now recognized. A proper arrangement of courses by a student will provide academic preparation toward the examinations for Chartered Life Underwriter (C.L.U.), Chartered Property Casualty Underwriter (C.P.C.U.), and new professional requirements in real estate. Also, from a purely personal or family viewpoint these courses can be of immense value.

Students who select a concentration in insurance and real estate should follow the general study program for the freshman and sophomore years. The program for the junior and senior years is outlined below.

	—Semester—	
	I	II
<i>Junior Year</i>		
Econ. 140—Money and Banking.....	3	....
B. A. 140—Financial Management .....	....	3
B. A. 130—Elements of Business Statistics	3	....
B. A. 150a—Marketing Principles and Organization.....	3	....
B. A. 150—Marketing Management .....	....	3
B. A. 190—Life Insurance	3	....
B. A. 191—Property Insurance .....	....	3
B. A. 195—Real Estate Principles	3	....
B. A. 196—Real Estate Finance .....	....	3
Elective .....	....	3
Total	15	15
<i>Senior Year</i>		
B. A. 180, 181—Business Law	4	4
Econ. 160—Labor Economics	3	....
B. A. 160—Personnel Management .....	....	3
B. A. 141—Investment Management	3	....
B. A. 194—Insurance Agency Management	3	....
B. A. 197—Real Estate Management .....	....	3
Electives	3	6
Total	16	16

Selection of electives may be made with the aid of the adviser from the following and other subjects:

*These courses are specific requirements for students concentrating in Industrial Administration.

Soc. 114—The City (3)
 Soc. 173—Social Security (3)
 Econ. 141—Theory of Money, Credit and Prices (3)
 Econ. 142—Public Finance and Taxation (3)
 B. A. 123—Income Tax Accounting (4)
 Econ. 147—Business Cycles (3)

B. A. 148—Advanced Financial Management (3)
 B. A. 151—Advertising (3)
 B. A. 165—Office Management (3)
 B. A. 166—Business Communications (3)
 B. A. 189—Business and Government (3)
 B. A. 290—Seminar in Insurance (3)
 B. A. 295—Seminar in Real Estate (3)

5. Marketing Administration

Modern business administration is concerned largely with marketing activities. Buying and selling of products and services comprise the major portion of the time and energies of a large group of our population. The ideals of our system of private property, individual initiative and free enterprise are closely related to present-day marketing organization and practice. Effective solutions of the problems of marketing are necessary to the success of the individual business enterprise and for the welfare of the consumer. If the costs of distribution are to be reduced or kept from rising unduly, it is necessary that careful study be made of the organization, policies, methods, and practices of advertising, selling, purchasing, merchandising, transportation, financing, storing, and other related marketing activities, and appropriate action taken by qualified technicians and executives.

The purpose of the marketing administration program is to give the student an opportunity to analyze, evaluate and otherwise study the problems connected with marketing institutions, organizations, policies, methods, and practices. The student who elects this field of concentration may develop his aptitudes, on the technical level, for research, selling, buying, and preparing advertising copy, and on the administrative level develop his abilities for organizing, planning, and directing the various activities in the field of marketing.

Thoughtful selection of courses from the following lists, in addition to those required of all students in business administration, will aid the student in preparing himself for an effective position in the field of marketing. He may form a concentration in:

- a. General Marketing
- b. Advertising
- c. Foreign Trade

- d. Retail Store Management
- e. Sales Management

B. A. 132, 133—Advanced Business Statistics (3, 3)
 *B. A. 143—Credit Management (3)
 Econ. 147—Business Cycles (3)
 *B. A. 151—Advertising (3)
 B. A. 152—Advertising Copy and Layout (3)
 *B. A. 153—Purchasing Management (3)
 *B. A. 154—Retail Store Management (3)
 B. A. 155—Problems in Retail Merchandising (3)
 B. A. 156—Marketing Research Methods (3)
 B. A. 158—Advertising Problems (3)
 B. A. 159—Newspaper Advertising (3)
 B. A. 165—Office Management (3)
 B. A. 166—Business Communications (3)

B. A. 170—Transportation Services and Regulation (3)
 B. A. 1711—Industrial and Commercial Traffic Management (3)
 B. A. 172—Motor Transportation (3)
 B. A. 190—Life Insurance (3)
 B. A. 191—Property Insurance (3)
 B. A. 195—Real Estate Principles (3)
 B. A. 150—Problems in Sales Management (3)
 B. A. 251—Problems in Advertising (3)
 B. A. 252—Problems in Retail Store Management (3)
 B. A. 257—Seminar in Marketing Management (arranged) (3)
 B. A. 258—Research Problems in Marketing (arranged) (3)

*These courses are specific requirements for students taking a concentration in Marketing Management.

For those especially interested in foreign trade, selections may be made from the following courses:

- | | |
|--|--|
| †Econ. 136—International Economic Policies and Relations (3) | the United States and Canada (3, 3) |
| Econ. 137—Economics of National planning (3) | Geog. 102—The Geography of Manufacturing in the United States and Canada (3) |
| †Econ. 149—International Finance and Exchange (3) | Geog. 110, 111—Latin America (3, 3) |
| B. A. 151—Advertising Programs and Campaigns (3) | Geog. 115—Peoples of Latin America (2) |
| †B. A. 157—Foreign Trade Procedure (3) | Geog. 120—Economic Geography of Europe (3) |
| †B. A. 170—Transportation Services and Regulation (3) | Geog. 122—Economic Resources and Development of Africa (3) |
| †B. A. 173—Overseas Shipping (3) | Geog. 130-131—Economic and Political Geog. of Southern and Eastern Asia (3, 3) |
| B. A. 19—Government and Business (3) | Geog. 180, 181—Principles of Geography (3, 3) |
| Ec. Geog. 4—Regional Geography of the Continents 8(3) | Geog. 260-261—Problems in the Geog. of Europe and Africa (3, 3) |
| Geog. 100, 101—Regional Geography of | |

6. Personnel Administration and Labor Economics

Recent development of large scale operation on the part of both private enterprise and government has emphasized the growing importance of personnel relationships. Successful operation depends on harmonious cooperation between employer and employee. The interests of the public, the owners, and the management, as well as those of the employees, may be greatly affected by the solutions evolved in any given case of personnel relationship. The growth of large-scale, centrally controlled labor organizations and the increased participation of governmental agencies in labor disputes have created problems for which business management, union officials, and government representatives have been, on the whole, ill-prepared to solve satisfactorily. The government, the unions, and business need men and women qualified to deal effectively with these problems. They should have broad training and technical information in the fields of business and public administration, economics, and psychology, together with suitable personalities. They must be able to approach these problems with an open mind, unbiased by personal and class prejudices.

Personnel administration which has to do with the direction of human effort, is concerned with securing, maintaining, and utilizing, an effective working force. People adequately trained in personnel administration find employment in business enterprises, governmental departments, governmental corporations, educational institutions and charitable organizations.

A student may select from the following courses those which will, in addition to those required of all students in business administration, best prepare him for the kind of personnel work he wishes to enter.

†These courses are specific requirements for students taking a concentration in Foreign Trade.

- *B. A. 163—Industrial Relations (3)
- *B. A. 164—Recent Labor Legislation and Court Decisions (3)
- *B. A. 167—Job Evaluation and Merit Rating (2)
- *B. A. 169—Industrial Management (3)
- G. & P. 111—Public Personnel Administration (3)
- Psych. 2—Applied Psychology (3)
- Psych. 121—Social Psychology (3)
- Psych. 161—Psychological Techniques in Personnel Administration (3)
- G. & P. 214—Problems in Public Personnel Administration (arranged) (3)
- B. A. 262—Seminar in Contemporary Trends in Labor Relations (3)
- B. A. 265—Development and Trends in Industrial Management (3)
- B. A. 266—Research in Personnel Management (arranged) (3)
- B. A. 267—Research in Industrial Relations (arranged) (3)
- B. A. 269—Studies of Special Problems in Employer-Employee Relationships (arranged) (3)
- B. A. 271—Theory of Organization (3)

7. Transportation Administration

The problems of transportation administration are complex and far reaching. The student preparing for this type of work should be well grounded in economics, government, and business administration, as well as being proficient in the use of the technical tools of the profession. Rail, highway, water, and air transportation are basic to our economic life, in fact, to our very existence. This curriculum gives considerable emphasis to air transportation.

The following courses, in addition to those required of all students in the college will aid the student in preparing himself for a useful place in the fields of air, water, highway, and railway transportation. This curriculum besides preparing for positions with carriers also fits the student for industrial traffic management, trade association and government work in transportation. (To major in Transportation Administration the student must complete 15 hours of the courses listed below including B.A. 171):

- B. A. 157—Foreign Trade (3)
- B. A. 170—Transportation Services and Regulation (3)
- B. A. 171—Industrial and Commercial Traffic Management (3)
- B. A. 172—Motor Transportation (3)
- B. A. 173—Overseas Shipping (3)
- B. A. 174—Commercial Air Transportation (3)
- B. A. 175—Airline Administration (3)
- B. A. 176—Problems in Airport Management (3)
- B. A. 184—Public Utilities (3)
- B. A. 270—Seminar in Air Transportation (3)
- B. A. 275—Seminar in Motor Transportation (3)
- B. A. 277—Seminar in Transportation (3)
- B. A. 284—Seminar in Public Utilities (3)

Other courses may be selected with the approval of the adviser for the curriculum.

8. Public Administration

The trend toward increased governmental participation in the fields of our economic, political and social life has been developing for a number of years so that now the government is the largest business enterprise in the country. In addition to the Federal Government, State and Local Government agencies have called upon the universities to aid in training young men or women for effective

*These courses are specific requirements for those students taking a concentration in Personnel Administration and Labor Economics.

public service. Students desiring a specialized training in the broad field of government service should take the regularly established curriculum in Government and Politics appearing in page 36-38 of this Catalog and select electives from the following:

- G. & P. 111—Public Personnel Administration (3)
- G. & P. 112—Public Financial Administration (3)
- G. & P. 181—Administrative Law (3)
- B. A. 10, 11—Organization and Control (2, 2)
- B. A. 20, 21—Principles of Accounting (4, 4)
- B. A. 130—Elements of Business Statistics (3)
- B. A. 189—Business and Government (3)
- Econ. 140—Money and Banking (3)
- B. A. 150a—Marketing Principles and Organization (3)

Other courses may be selected with the approval of the adviser for the program. Students pursuing this curriculum should arrange their programs under the supervision of the Department of Government and Politics.

II. ECONOMICS

The program of studies in the field of Economics is designed to meet the needs of students who wish to concentrate either on a major or minor scale in this division of the Social Sciences. Students who expect to enroll in the professional schools and those who are planning to enter the fields of Business or Public Administration, or Foreign Service, or Social Service Administration, will find courses in economics of considerable value to them in their later work. A student of economics should choose his courses to meet the requirements for his major objective, or the Master of Arts, or a Doctor of Philosophy degree. (He should consult the bulletin of the Graduate School for the general requirements for the advanced degrees.)

Requirements for an Economics Major

In addition to the University requirements in Social Studies, English, Military Science, Hygiene, and Physical Activities, the student majoring in Economics is required to complete a minimum of 36 semester hours in Economics with an average grade of not less than "C". Required courses are Econ. 4, 5, 31, 32 and 132. B.A. 130 (Statistics) is also required, and B.A. 20 and 21 (Accounting) are recommended. Other courses in Economics to meet the requirements of the major are to be selected with the aid of a faculty adviser. Business Administration courses which may count as Economics credit are B.A. 130, 132, 133, 164, 184, 189.

Economics majors enrolled in the College of Arts and Sciences must, of course, fulfill all the specific requirements of that college, including 12 semester hours of Foreign Language and 12 semester hours of Natural Science and Mathematics.

Economics majors enrolled in the College of Business and Public Administration may elect to take a foreign language or, in lieu of Foreign Language, may take B.A. 10 and 11 and Geog. 1 and 2. All B.P.A. students must take 6 semester hours of Mathematics, but may substitute B.A. 20 and 21 for Natural Science.

A student who elects Economics as a major will normally have earned 10 semester hours credit in the lower division courses in Economics prior to begin-

ning the advanced work of the junior year. These lower division courses must be completed with an average grade of not less than "C".

The specific courses comprising the student's program of study should be selected with the aid of a faculty adviser in terms of the student's objectives and major interest. Attention is directed to requirements under the American Civilization Program, p. 14.

Study Program for Economics Majors

	—Semester—	
	I	II
<i>Freshman Year</i>		
Speech 18, 19—Introductory Speech.....	1	1
Econ. 4, 5—Economic Developments.....	2	2
Eng. 1, 2—Composition and American Literature.....	3	3
Mathematics 5, 6 or 10, 11 or 18, 19.....	3	3
G. & P. 1—American Government.....	3	....
Foreign Language or B. A. 10, 11.....	3-2	3-2
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Health 2, 4—Personal and Community Health (Women).....	2	2
Physical Activities (Men and Women).....	1	1
Elective		3
Total	17-19	17-19
<i>Sophomore Year</i>		
Eng. 3, 4, or 5, 6—Composition and World or English Literature	3	3
Econ. 31, 32—Principles of Economics.....	3	3
Foreign Language or Geog. 1, 2.....	3-2	3-2
Natural Science or B. A. 20, 21.....	3	3
H. 5, 6—History of American Civilization.....	3	3
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities (Men and Women).....	1	1
Total	15-19	15-19
<i>Junior Year</i>		
Econ. 140—Money and Banking.....	3	....
B. A. 150a—Marketing Principles and Organization.....	3	....
B. A. 130—Elements of Business Statistics.....	....	3
Econ. 160—Labor Economics.....	3	....
Econ. 131—Comparative Economic Systems.....	....	3
Electives in Economics, Government and Politics, and Business Administration*	6	9
Total	15	15
<i>Senior Year</i>		
Econ. 132—Advanced Economic Principles.....	3	....
Econ. 171—Contemporary Economic Thought.....	3	....
Econ. 171—Economics of American Industries or		
B. A. 184—Public Utilities.....	3	....
Econ. 142—Public Finance and Taxation.....	....	3
Electives in Economics, Government and Politics and Business Administration*	6	12
Total	15	15

*Other electives may be selected with the approval of the Head of the Department of Economics. Normally these electives must be on the Junior and Senior level.

III. FOREIGN SERVICE AND INTERNATIONAL RELATIONS

If the student expects to enter the foreign service, he should be well grounded in the language, geography, history, and politics of the region of his anticipated location as well as in the general principles and practices of organization and administration. It should be recognized that only a limited training can be secured during the undergraduate period. When more specialized or more extensive preparation is required, graduate work should be planned. The individual program in either instance, however, should be worked out under the guidance of a faculty adviser. The following study program is offered as a guide in the selection of subjects. Attention is directed to requirements under the American Civilization Program, p. 14.

<i>Freshman Year</i>	—Semester—	
	I	II
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government.....	3	....
Foreign Language (Selection).....	3	3
Geog. 1, 2—Economic Resources.....	2	2
Econ. 4, 5—Economic Developments.....	2	2
Mathematics 5, 6 or 10, 11.....	3	3
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Health 2, 4—Personal and Community Health (Women).....	2	2
Physical Activities (Men and Women).....	1	1
Elective	1	1
Total	19-20	19-20

Sophomore Year

Eng. 3, 4, or 5, 6—Composition and World or English Literature.....	3	3
Foreign Language (Continuation of Freshman year selection)....	3	3
Econ. 31, 32—Principles of Economics.....	3	3
H. 5, 6—History of American Civilization.....	3	3
G. & P.—Comparative Government, selection in accordance with the student's need.....	2	2
Sp. 18, 19—Introductory Speech.....	1	1
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities (Men and Women).....	1	1
Total	16-19	16-19

Junior Year

B. A. 150a—Marketing Principles and Organization.....	3	....
Econ. 140—Money and Banking.....	3	....
Econ. 160—Labor Economics .....	....	3
G. & P. 101—International Political Relations.....	....	3
B. A. 130—Elements of Business Statistics.....	3	....
Econ. 131—Comparative Economic Systems.....	....	3
Ec. Geog.—Selection of Regional division to fit student's needs....	3	3
Electives to meet student's major interest.....	3	3
Total	15	15

<i>Senior Year</i>	<i>—Semester—</i>	
	<i>I</i>	<i>II</i>
G. & P. 102—International Law.....	...	3
G. & P.—American Foreign Relations.....	3	...
G. & P. 131, 132—Constitutional Law.....	3	3
B. A. 189—Government and Business.....	3	...
Ec. 132—Advanced Economic Prin., or Ec. 134, Contemporary Thought	3	...
G. & P. 181—Administrative Law.....	...	3
Econ. 136—International Economic Policies and Relations.....	3	...
Econ. 149—International Finance and Exchange.....	...	3
Electives to meet student's major interest.....	...	3
Total	15	15
American History 127, 129, 133, 135, 145, and 146.		
European History 175, 176, 185, 186, and History 191—History of Russia ; History 195—The Far East.		
Government and Politics 7, 8, 9, 10, 105, 108, 154, and 197.		

IV. GEOGRAPHY

This curriculum is designed to aid the student in securing the facts concerning the major geographical areas of the world and in studying and analyzing the manner in which these facts affect economic, political, and social activities. The student interested in international trade, international political relations, diplomacy, overseas governments, and national aspirations will find the courses in this department of great practical value. Work is offered on both the undergraduate and the graduate levels.

Students who expect to enroll in the engineering and professional schools and those who are planning to enter the fields of Business and Public Administration, or Foreign Service, will find courses in geography of material value to them in their later work. Openings exist for well-trained geographers in government service, in universities, colleges, and high schools, as well as in private business. A student of geography should choose his courses to meet the requirements for his major objective, be it undergraduate major or minor, or a Master of Arts, or a Doctor of Philosophy degree. He should consult the bulletin of the Graduate School for the general requirements for the advanced degrees.

Requirements for an Undergraduate Major in Geography

A student majoring in geography is required to complete satisfactorily 120 semester hours of work in addition to the required work in military science, hygiene, and physical activities. A general average of at least "C" is required for graduation. Only courses in which the student receives a grade of "C" or above will be counted toward the major.

The specific requirements for the geography major are:

I. Geog. 10 and 11 (3,3), or equivalent; Geog. 30 (3); Geog. 35 (3); Geog. 40 and 41 (3,3); Geog. 170 (3) and 18 hours in other Geography courses numbered 100 to 199, of which 6 hours must be in non-regional courses; a total of 39 hours in Geography.

II. Social Sciences—G. & P. 1 (3); Econ. 31 and 32 (3, 3); History 5 and 6 (3, 3); Soc. 105 (3); a total of 18 semester hours.¹

III. Natural Sciences—Botany 1 and 113 or 102 (4, 2 or 3); Agron. 114 or equivalent (4); Chem. 1 (4). Total of 13 (14) semester hours.

IV. English—Eng. 1 and 2 (3, 3) and 3, 4, or 5, 6 (3, 3); Speech 18, 19 (1, 1); a total of 14 semester hours.¹

V. Foreign Language and Literature—12 semester hours in one language, unless an advanced course is taken.

VI. Military Science, Hygiene, and Physical Activities. The present University requirement is 16 semester hours in Military Science and Physical Activities for able-bodied male students. Women students are required to take 8 semester hours credit in hygiene and physical activities.

A student who elects geography as a major must have earned eighteen semester hours credit in the prerequisite courses in geography prior to beginning the advanced work of the junior year. These are normally taken during the freshman and sophomore years. Only courses in which the student receives a grade of "C" or above will be counted toward the major.

A minor in geography should consist of Geog. 10 and 11 (3, 3), Geog. 30 (3) and such other courses as the major adviser deems suitable.

For the guidance of those who expect to do graduate work in geography, it should be emphasized that the Department of Geography is particularly interested in the appraisal of natural resources in relation to economic, social and political developments; it aims to encourage study of the natural resource base of the culture of an area. This necessitates, on the one hand, an elementary knowledge of certain of the physical sciences as a basis for the physical aspects of geographic study and resource analysis. On the other hand, a certain amount of knowledge of economics, of sociology and of political organization is necessary in order to understand stages of resource utilization and the social consequences.

The specific courses comprising the student's program of studies should be selected with the aid of a faculty adviser from the Department of Geography in terms of the student's objective and major interests. Attention is directed to requirements under the American Civilization Program, page 14.

Special study programs are available for those who wish to concentrate in cartography, and for those who wish to prepare for geographic work in planning agencies.

¹See American Civilization Program, p. 14.

Study Program for Geography Majors:

	—Semester—	
	I	II
<i>Freshman Year</i>		
Geog. 10, 11—General Geography.....	3	3
Chem. 1—Introductory Chemistry.....	4	....
Bot. 1—General Botany.....	....	4
Speech 18, 19—Introductory Speech.....	1	1
G. & P. 1—American Government.....	3	....
Eng. 1, 2—Composition and American Literature.....	3	3
Foreign Language.....	3	3
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
P. E. 42, 44—Hygiene (Women).....	2	2
Physical Activities (Men and Women).....	1	1
Total	20-21	17-18
<i>Sophomore Year</i>		
Geog. 30—Principles of Morphology.....	3	....
Geog. 35—Map. Reading and Interpretation.....	....	3
Geog. 40—Principles of Meteorology.....	3	....
Geog. 41—Introductory Climatology.....	....	3
Hist. 5, 6—History of American Civilization.....	3	3
Eng. 3, 4 or 5, 6—Composition and Readings in Literature.....	3	3
Foreign Language.....	3	3
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities (Men and Women).....	1	1
Total	16-19	16-19
<i>Junior Year</i>		
Bot. 113—Plant Geography.....	2	....
Agron. 114—Soil Geography.....	....	4
Soc. 105—Cultural Anthropology.....	....	3
Econ. 31, 32—Principles of Economics.....	3	3
Geog.—Selection to fit student's needs.....	6	3
Electives, with adviser's consent.....	6	3
Total	17	16
<i>Senior Year</i>		
Geog. 170—Local Field Course.....	3	....
Geog.—Selection to fit student's needs.....	6	6
Electives, with adviser's consent.....	6	6
Total	15	12

V. GOVERNMENT AND POLITICS

Government and Politics Major and Minor Requirements

In this course of study, the following conditions are to be observed: (1) G. & P. 1, American Government, or its equivalent, is prerequisite to all other courses offered by the Department. Persons taking this course of study must complete G. & P. 1 with a grade of "C" or better. (2) In this curriculum, at least 36 hours of Government and Politics, including G. & P. 1, must be completed. No Government and Politics course with a grade of less than "C" may be counted as a part of these 36 hours. (3) The electives of the junior and

senior years are to be chosen from the list suggested below, unless consent to take other courses is obtained from the Head of the Department. Electives in Government and Politics and in related fields are to be chosen to make an integrated course of study. Attention is directed to requirements under the American Civilization Program, page 14.

	—Semester—	
	I	II
<i>Freshman Year</i>		
G. & P. 1—American Government.....	3	....
Eng. 1, 2—Composition and American Literature.....	3	3
Math. 5, 6 or 10, 11.....	3	3
Econ. 4, 5—Economics Development	2	2
Speech 18, 19—Introductory Speech.....	1	1
Foreign Language.....	3	3
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Health 2, 4 Personal and Community Health (Women).....	2	2
Physical Activities (Men and Women).....	1	1
Elective		3
Total	18-19	18-19

Sophomore Year

G. & P. 4—State Government and Administration.....	3	....
G. & P. 5—Local Government and Administration or Psychology 1 (Introduction to Psychology) or Sociology 52 (Criminology)	....	3
Eng. 3, 4 or 5, 6—Composition and World or English Literature	3	3
Foreign Language.....	3	3
Econ. 31, 32—Principles of Economics.....	3	3
H. 5, 6—History of American Civilization.....	3	3
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities (Men and Women).....	1	1
Total	16-19	16-19

Junior Year

G. & P. 7 or 9, 8 or 10—Comparative Government.....	2	2
G. & P. 110—Public Administration.....	3	....
G. & P. 141—History of Political Theory.....	3	....
G. & P. 174—Political Parties.....	3	....
G. & P. 124—Legislatures and Legislation.....	....	3
G. & P.—(Elective).....	....	3
Electives	6	9
Total	17	17

Senior Year

G. & P. 101—International Political Relations.....	3	....
G. & P. 131-132—Constitutional Law.....	3	3
One full year of advanced Economics or B. A. courses.....	3	3
Electives	6	9
Total	15	15

Suggested electives: Any G. & P. courses not required above. Any history courses related to the student's integrated course of study.

Econ. 131—Comparative Economic Systems
 Econ. 132—Advanced Economic Principles
 Econ. 134—Contemporary Economic Thought
 Econ. 140—Money and Banking
 Econ. 142—Public Finance and Taxation
 Econ. 160—Labor Economics
 B. A. 130—Elements of Business Statistics

B. A. 164—Labor Legislation and Court Decisions
 B. A. 180, 181—Business Law
 B. A. 189—Business and Government
 Philosophy 155—Logic
 Psychology 121, 122—Social Psychology
 Sociology 52—Criminology
 Sociology 147—Sociology of Law
 Sociology 186—Sociological Theory

VI. JOURNALISM AND PUBLIC RELATIONS

The department offers two professional majors: one in editorial journalism, for those who seek beginning news jobs upon graduation; the other in public relations, for those who plan to work in public relations, in public information, or on company publications.

Although a minor is not permitted in this college, a student may take as many as 12 semester hours in a subject or field other than his major. Specialized jobs are most attractive financially. Journalism majors ordinarily elect secondary concentrations in such fields as agriculture, home economics, business administration, advertising, foreign language, science, social and political sciences, psychology, philosophy. Public relations majors choose theirs from business administration, advertising, political and social sciences, psychology, foreign language. Other electives may be approved by the advisor in this department.

Office Techniques may be taken for lower-division elective credit (courses numbered below 100). Since all work in the technical courses of the Department of Journalism and Public Relations is typewritten, those who cannot type at least 35 words per minute should enroll in O. T. 1 before taking Journalism 10. Women planning to seek combination journalism-secretarial or public relations-secretarial jobs upon graduation may take typing and shorthand for lower-division elective credit.

Since 57 hours of upper-division work (courses numbered 100 or more) are required for graduation in this department, the student should use his electives and required courses the first two years to work off all prerequisites for his upper-division studies. No lower-division course can substitute for an upper-division elective.

To enroll in an upper-division course, the student must have accumulated at least 56 hours of academic work (exclusive of R.O.T.C. and Physical Activities), with an over-all grade average of at least 2. (C).

To enroll as an upper-division major in this department, a student must have earned at least C in both Journalism 10 and 11. A major who makes less than a C in an upper-division required course is asked to repeat the course and/or change his major.

A student may declare his major in this department when he enrolls in it at the beginning of any semester, and ordinarily he will be advised from that time until graduation by the same advisor in the department. In no case, however, can one be graduated with a major in this department without having spent at least four semesters as a major in one of its curricula.

Majors are urged to work on a student publication throughout their college residence, and to obtain professional experience in the summers.

The department maintains close working relations with professionals and their organizations in this area. One of the purposes is to provide speakers, trips, laboratories, and other types of training for students enrolled in the department's technical courses. The student is notified in advance of each event, and his participation is required unless it happens to conflict with one of his scheduled classes.

A required part of the journalism major's education consists of training on the Baltimore Sunpapers or Baltimore News-Post.

Advanced reporting students spend one afternoon a week with Sun reporters on police and city hall beats; advanced editing students spend one afternoon a week at the central copy desk or at the rewrite desk.

Some journalism majors serve as "stringers" in the special coverage of the campus maintained by the Sunpapers and the News-Post. A \$500 annual *Baltimore Sun* journalism scholarship is available to seniors.

Outside work necessitates enrollment in less than a normal program of study, and in no case should the student attempt to work full time and take more than a course or two.

Listed below are the required curricula in journalism and in public relations. Each curriculum requires a minimum of 33 hours in the department, and not more than 40 hours in the department is permitted.

Lower-division Curricula (Journalism, Public Relations)

	—Semester—	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature ¹	3	3
Soc. 1—Sociology of American Life ¹	3	....
G. & P. 1—American Government ¹.....	....	3
Geog. 1, 2—Economic Resources and Econ. 4, 5—Economic Developments of foreign language.....	4-3	4-3
Math. 5, 6—General Mathematics and Mathematics of Finance (or natural science).....	3-4	3-4
Speech 18, 19—Introductory Speech (or Speech 1, 2).....	1-2	1-2
Physical Activities (Men and Women).....	1	1
Hygiene (Women).....	2	2
Air Science 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Total	18	18
<i>Sophomore Year</i>		
Journ. 10, 11—News Reporting I, II.....	3	3
Eng. 3, 4 or 5, 6—Composition and World or English Literature	3	3
Hist. 5, 6—History of American Civilization ¹	3	3
Econ. 31, 32—Principles of Economics.....	3	3
B. A. 10, 11—Organization and Control (or foreign language)....	2-3	2-3
Physical Activities (Men and Women).....	1	1
Air Science 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Total	18	18

¹See American Civilization Program, p 14.

Journalism Study Program

	—Semester—	
	I	II
<i>Junior Year</i>		
Journ. 160—News Editing I.....	3	....
Journ. 163—Newspaper Typography (either semester).....	....	3
Journ. 176—Newsroom Problems.....	....	3
G. & P. 178—Public Opinion.....	3	....
Electives	7	10
Total	16	16
<i>Senior Year</i>		
Journ. 161—News Editing II.....	....	3
Journ. 165—Feature Writing.....	....	3
Journ. 175—Reporting of Public Affairs.....	3	....
Journ. 191—Law of the Press.....	....	3
Journ. 192—History of American Journalism.....	3	....
B. A. 189—Business and Government (either semester).....	3	....
Electives	7	7
Total	16	16

Public Relations Study Program

Requirements for the first two years of the public relations curriculum are the same as those in the journalism program (see above).

The following curriculum is taken in the junior and senior years by the public relations student who plans to work for a public relations firm or in a public relations department.

For electives preparatory to public relations work in business, the student should look to at least the following fields: business administration, advertising, economics, business statistics, personnel management, and marketing. For government public relations work: public administration, American history, international relations, political parties, etc. Good elective courses for any public relations major may be found in psychology, sociology, speech, English, radio, and education.

	—Semester—	
	I	II
<i>Junior Year</i>		
Journ. 160—News Editing I.....	3	....
Journ. 165—Feature Writing (either semester).....	....	3
P. R. 166—Public Relations.....	3	....
Journ. 181—Press Photography (either semester).....	3	....
P. R. 194—Public Relations Cases.....	....	2
Electives	7	11
Total	16	16
<i>Senior Year</i>		
P. R. 170—Publicity Techniques.....	3	....
P. R. 171—Industrial Journalism.....	2	....
P. R. 186—Public Relations of Government.....	....	3
Journ. 191—Law of the Press.....	....	3
P. R. 195—Seminar in Public Relations.....	....	2
G. & P. 177—Public Opinion.....	3	....
Electives	8	8
Total	16	16

VII. OFFICE TECHNIQUES AND MANAGEMENT

1. Office Management

With the rapidly mounting volume of office work now being done, and the rapid increase in the number of office workers required to do it, effective office management and supervision is needed. Despite the current popular opinion that the office manager needs to know only a number of systems and machines, there is an ever-growing group of executives who believe that the management and supervision of an office is quite as important a job as the management of a factory or any other industrial enterprise.

Any young man or woman entering business need have no hesitancy in preparing himself for the position of office manager, for that position has proved a stepping stone to positions of great responsibility for many of our present executives.

The student interested in this field will find the following required courses with the suggested electives under the guidance of the adviser, a valuable aid in preparing for positions in this field. Attention is directed to requirements under the American Civilization Program on page 14.

Office Administration Study Program

	—Semester—	
	I	II
<i>Freshman Year</i>		
Geog. 1, 2—Economic Resources.....	2	2
Eng. 1, 2—Composition and American Literature.....	3	3
B. A. 10, 11—Organization and Control.....	2	2
Math. 5—General Mathematics.....	3	....
Math. 6—Mathematics of Finance.....	....	3
G. & P. 1—American Government.....	3	....
O. T. 1—Principles of Typewriting.....	2	....
O. T. 2—Intermediate Typewriting.....	....	2
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Hea. 2, 4—Personal and Community Health (Women).....	2	2
Physical Activities (Men and Women).....	1	1
Elective		3
Total	18-19	18-19

Sophomore Year

Eng. 3, 4—Composition and World Literature.....	3	3
Econ. 31, 32—Principles of Economics.....	3	3
B. A. 20, 21—Principles of Accounting.....	4	4
Speech 18, 19—Introductory Speech.....	1	1
H. 5, 6—History of American Civilization.....	3	3
Elective	2	....
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities (Men and Women).....	1	1
Total	17-19	15-18

	—Semester—	
	I	II
<i>Junior Year</i>		
Econ. 140—Money and Banking.....	3	....
Psych. 1—Introduction to Psychology.....	3	....
B. A. 150a—Marketing Principles and Organization.....	3	....
Econ. 160—Labor Economics.....	3	....
B. A. 112—Records Management.....	2	....
B. A. 121—Cost Accounting.....	....	4
B. A. 130—Elements of Business Statistics.....	....	3
B. A. 150—Marketing Management.....	....	3
B. A. 160—Personnel Management.....	....	3
B. A. 114—Machines Management.....	....	3
Electives	2	....
Total	16	16
<i>Senior Year</i>		
B. A. 165—Office Management.....	3	....
B. A. 166—Business Communications	3	....
B. A. 169—Industrial Management.....	3	....
B. A. 180, 181—Business Law	4	4
B. A. 168—Advanced Office Management.....	....	3
Electives in Accounting, Marketing, Real Estate, Insurance, Finance, and Transportation.....	3	8
Total	16	15

2. Office Techniques

The purpose of this curriculum is not only to furnish merely technical or vocational training, but also, to aid the student in developing his natural aptitudes for secretarial and administrative positions. The development of the student's capacity to plan, organize, direct, and execute is the guiding principle followed in this curriculum. This program of study will appeal to the young man or woman who is ambitious, naturally capable, and willing to work. It will also appeal to those who realize that positions in secretarial service require much more than merely skill in typewriting and stenography. These are essential tools, but knowledge and skill in other subjects are as important for the more responsible positions.

Placement Examination

Students with one or more years of college, high school, or equivalent training in shorthand and/or typewriting are required to take a placement examination in those subjects at the time of their first registration in a shorthand or typewriting course at the University.

Credit will be given only for the work done in residence.

Record of Competency

Students must make a grade of "C" in each course in the Office Techniques sequence before they may progress to the next advanced course. A major earning less than a C grade in an advanced course, is asked to repeat the course.

The following program of study is designed to give the capable student an opportunity to develop his potential aptitudes to an effective end. Attention is directed to requirements under the American Civilization Program on page 14.

	—Semester—	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government.....	3	....
B. A. 10, 11—Organization and Control.....	2	2
Speech 18, 19—Introductory Speech.....	1	1
Math. 5, 6—General Mathematics and Mathematics of Finance....	3	3
O. T. 1—Principles of Typewriting*.....	2	....
O. T. 2—Intermediate Typewriting.....	....	2
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Hea. 2, 4—Personal & Community Health (Women).....	2	2
Physical Activities (Men and Women).....	1	1
Elective		3
Total	17-18	17-18

<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Econ. 31, 32—Principles of Economics.....	3	3
O. T. 12, 13—Principles of Shorthand I, II.....	4	4
O. T. 10—Office Typewriting Problems.....	2	....
Econ. 4, 5—Economic Developments.....	2	2
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities (Men and Women).....	1	1
Total	18-21	16-19

<i>Junior Year</i>		
B. A. 20, 21—Principles of Accounting.....	4	4
O. T. 116—Advanced Shorthand†.....	3	....
O. T. 117—Gregg Transcription†.....	2	....
O. T. 118—Gregg Shorthand Dictation.....	....	3
B. A. 166—Business Communications.....	....	3
B. A. 114—Machines Management.....	3	....
B. A. 112—Records Management.....	2	....
Econ. 140—Money and Banking.....	....	3
Econ. 160—Labor Economics.....	3	....
B. A. 160—Personnel Management.....	....	3
Total	17	16

<i>Senior Year</i>		
O. T. 110—Secretarial Work.....	3	....
O. T. 114—Secretarial Office Practice.....	....	3
B. A. 165—Office Management.....	3	....
B. A. 168—Advanced Office Management.....	....	3
B. A. 180, 181—Business Law.....	4	4
Electives	3	6
B. A. 150a—Marketing Principles and Operation.....	3	....
Total	16	16

*O. T. 1 should be completed prior to enrollment in Principles of Shorthand 1 (O. T. 12).

†O. T. 116, Advanced Shorthand, and O. T. 117, Gregg Transcription must be taken concurrently. O. T. 10 should be completed prior to O. T. 116, Advanced Shorthand.

Combined Secretarial Training and Business Teaching Curriculum

Capable students may elect courses offered by the College of Education in such a manner as to qualify themselves for commercial teaching in high schools.

VIII. BUREAU OF BUSINESS AND ECONOMIC REASEARCH

The Bureau of Business and Economic Research is recognized as the laboratory for the practical study of business and economic problems. As such, it has three principal functions: first, to train students in the field of business and economic research; second, to disseminate information concerning business and economic conditions in Maryland, or which affect Maryland interests, and third, to give active research assistance to interested business firms, governmental units, and citizen groups.

Through the facilities of the Bureau qualified interested students can obtain practical experience in research work. This involves the application of techniques and principles studied in the class room to actual business and governmental problems.

The Bureau—through its direct contact with business, government, labor and the professions and in its research into problems in these fields—serves as an important source of information relative to business and economic conditions and developments in this region. This information is made available, in part, by means of Bureau publications and, in part, by direct inquiry to the Bureau. This service is supplemented by active cooperation with individual business firms and citizen organizations within the state who request assistance in the study of specific problems which are recognized as having an important bearing upon community welfare. The Bureau welcomes the opportunity to be of real service to such organizations.

IX. BUREAU OF GOVERNMENTAL RESEARCH

The Bureau of Governmental Research was organized in 1947, then called the Bureau of Public Administration. It is closely allied, both in function and personnel, with the Department of Government and Politics. The Department of Government and Politics is the teaching agency; the Bureau of Governmental Research is the research agency. The Bureau's activities relate primarily to the problems of state and local government in Maryland. The Bureau engages in research and publishes findings with reference to local, state and national government. It undertakes surveys and offers its assistance and service to units of government in Maryland. Finally, it serves as a clearing house of information for the benefit of Maryland state and local government. The Bureau furnishes an opportunity for qualified interested students to secure practical experience in research in government problems.

X. MARYLAND MUNICIPAL LEAGUE

The office of the Maryland Municipal League, an organization of Maryland cities, is located in the College of Business and Public Administration. The League provides opportunities for association to municipal officials, offers services to city governments and organizes legislative programs affecting municipal affairs. It publishes monthly the Maryland Municipal News. The League's mailing address is: Maryland Municipal League, Box 276, College Park, Maryland.

COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee, will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. Not all courses numbered 100 to 199 may be taken for graduate credit.

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters. Courses not otherwise designated are lecture courses. The number of hours' credit is shown by the arabic numeral in parentheses after the title of the course. A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

BUSINESS ORGANIZATION AND ADMINISTRATION

Professors Frederick, Calhoun, Clemens, Cook, Cover, Fisher, Mounce, Pyle, Reid Sweeney, Taff, Watson, Wedeberg, Wright; Associate Professors Gentry, Dawson; Assistant Professors Alberts, Daiker, Lee, Nelson; Instructors Butler, Cluse, Edelson, Heye, Himes; Lecturers Muhlbach, Tierney.

B.A. 10, 11. Organization and Control (2, 2).

First and second semesters. Required in all Bus. Adm. curriculums. A survey course treating the internal and functional organization of a business enterprise. B.A. 11 includes industrial management, organization and control.

B.A. 20, 21. Principles of Accounting (4, 4).

First and second semesters. Required in all Business Organization curriculums. Prerequisite, Sophomore standing. The fundamental principles and problems involved in accounting for proprietorships, corporations and partnerships.

For Advanced Undergraduates and Graduates

B.A. 110, 111. Intermediate Accounting (3, 3).

First and second semesters. Prerequisite, a grade of B or better in B.A. 21 for majors in accounting or consent of instructor. A comprehensive study of the theory and problems of valuation of assets, application of funds, corporation accounts and statements, and the interpretation of accounting statements.

B.A. 112. Records Management (2).

First and second semesters. Prerequisite, junior standing. Laboratory fee, \$7.50. Specific management methods and techniques, that have proved valuable in the creation, use, maintenance, protection and disposition of records, are studied.

B.A. 114. Machines Management (3).

First and Second Semesters. Prerequisite, junior standing. Laboratory fee, \$7.50. Mechanization has complicated the problem of managing office activities. This course is devoted to the study of the management and utilization of modern office machines.

B.A. 116. Public Budgeting (3).

Prerequisites, B.A. 21 and Econ. 32. A study of budgetary administration in the United States, including systems of financial control and accountability, the settlement of claims, centralized purchasing and the reporting of financial operations.

B.A. 118. Governmental Accounting (3).

Prerequisite, B.A. 111, or consent of instructor. The content of this course covers the scope and functions of governmental accounting. It considers the principles generally applicable to all forms and types of governmental bodies and a basic procedure adaptable to all governments.

B.A. 121. Cost Accounting (4).

Prerequisite, a grade of B or better in B.A. 21 for majors in accounting or consent of instructor. A study of the fundamental procedures of cost accounting, including those for job order, process and standard cost accounting systems.

B.A. 122. Auditing Theory and Practice (3).

First semester. Prerequisite, B.A. 111. A study of the principles and problems of auditing and application of accounting principles to the preparation of audit working papers and reports.

B.A. 123. Income Tax Accounting (4).

Prerequisite, a grade of B or better in B.A. 21 for majors in accounting, or consent of instructor. A study of the important provisions of the Federal Tax Law, using illustrative examples, selected questions and problems, and the preparation of returns.

B.A. 124, 126. Advanced Accounting (3, 3).

First and second semesters. Prerequisite, B.A. 111. Advanced accounting theory applied to specialized problems in partnerships, estates and trusts, banks, mergers and consolidations, receiverships and liquidations; also budgeting and controllership.

B.A. 125. C.P.A. Problems (3).

Second semester. Prerequisite, B.A. 124, or consent of instructor. A study of the nature, form and content of C.P.A. examinations by means of the preparation of solutions to, and an analysis of, a large sample of C.P.A. problems covering the various accounting fields.

B.A. 127. Advanced Auditing Theory and Practice (3).

Second semester. Prerequisite, B.A. 122. Advanced auditing theory, practice and report writing.

B.A. 128. Advanced Cost Accounting (2).

Prerequisite, B.A. 121. A continuation of basic cost accounting with special emphasis on process costs, standard costs, joint costs and by-product costs.

B.A. 129. Apprenticeship in Accounting (0).

Prerequisites, minimum of 20 semester hours in accounting and the consent of the accounting staff. A period of apprenticeship is provided with nationally known firms of certified public accountants from about January 15 to February 15, and for a semester after graduation.

B.A. 130 Elements of Business Statistics (3).

Prerequisite, Junior standing. Required for graduation. Laboratory fee, \$3.50. This course is devoted to a study of the fundamentals of statistics. Emphasis is placed upon the collection of data; hand and machine tabulation; graphic charting; statistical distribution; averages; index numbers; sampling; elementary tests of reliability and simple correlations.

B.A. 132, 133. Advanced Business Statistics (3, 3).

First and second semesters. Prerequisite, B.A. 130. Laboratory fee, \$3.50 for each course. The use of statistical methods and techniques in economic studies and in the fields of business and public administration. Advanced methods of correlation and other selected techniques are applied to statistical analyses of economic fluctuations, price changes, cost analysis, and market demand indexes and functions.

B.A. 140. Financial Management (3).

Prerequisite, B.A. 21 and Econ. 140. This course deals with principles and practices involved in the organization, financing, and rehabilitation of business enterprises; the various types of securities and their use in raising funds, apportioning income, risk, and control; intercorporate relations; and new developments. Emphasis on solution of problems of financial policy faced by management.

B.A. 141. Investment Management (3).

First semester. Prerequisite, B.A. 140. A study of the principles and methods used in the analysis, selection, and management of investments; investment programs, sources of investment information, security price movements, government, real estate, public utility, railroad, and industrial securities.

B.A. 142. Banking Policies and Practices (3).

Second semester. Prerequisite, Econ. 140. A study of the organization and management of the Commercial Bank, the operation of its departments, and the methods used in the extension of commercial credit.

B.A. 143. Credit Management (3).

First and second semesters. Prerequisite, B.A. 140. A study of the nature of credit and the principles applicable to its extension and redemption for mercantile and consumer purposes; sources of credit information and analysis of credit reports; the organization and management of a credit department for effective control. Recent developments and effective legal remedies available.

B.A. 148. Advanced Financial Management (3).

Second semester. Prerequisite, B.A. 140. Advanced course designed for students specializing in finance. Emphasis is placed upon the techniques employed by executives in their application of financial management practice to selected problems and cases. Critical classroom analysis is brought to bear upon actual methods and techniques used by business enterprises.

B.A. 149. Analysis of Financial Statements (3).

Prerequisites, B.A. 21, B.A. 140. Analysis of financial statements for the guidance of executives, directors, stockholders, and creditors, valuation of balance sheet items; determination and interpretation of ratios.

B.A. 150. Marketing Management (3).

Prerequisite, B.A. 150a. A study of the work of the marketing division in a going organization. The work of developing organizations and procedures for the control of marketing activities are surveyed. The emphasis throughout the course is placed on the determination of policies, methods, and practices for the effective marketing of various forms of manufactured products.

B.A. 150a. Marketing Principles and Organization (3).

Prerequisite, Econ. 32 or 37. This is an introductory course in the field of marketing. Its purpose is to give a general understanding and appreciation of the forces operating, institutions employed, and methods followed in marketing agricultural products, natural products, services, and manufactured goods.

B.A. 151. Advertising (3).

First semester. Prerequisite, B.A. 150. A study of the role of advertising in the American economy; the impact of advertising on our economic and social life, the methods and techniques currently applied by advertising practitioners, the role of the newspaper, magazine, and other media in the development of an advertising campaign, modern research methods to improve the effectiveness of advertising, and the organization of the advertising business.

B.A. 152 Advertising Copy and Layout (3).

Second semester. Prerequisite, B.A. 151, and senior standing. A study of the practices and techniques of copy writing and layout. The student will participate in exercises designed to teach him the essential principles of writing copy for various media and presenting ideas in visual form. The course deals with the development of ideas rather than art forms.

B.A. 153. Purchasing Management (3).

First semester. Prerequisites, B.A. 150 and senior standing. Studies the problems of determining the proper sources, quality and quantity of supplies, and of methods of testing quality; price policies, price forecasting, forward buying, bidding and negotiation; budgets and standards of achievement. Particular attention is given to government purchasing and methods and procedures used in their procurement.

B.A. 154. Retail Store Management (3).

First semester. Prerequisite, B.A. 150 and senior standing. Retail store organization, location, layout and store policy; pricing policies, price lines, brands, credit policies, records as a guide to buying; purchasing methods; supervision of selling; training and supervision of retail sales force; and administrative problems.

B.A. 155. Problems in Retail Merchandising (3).

Second semester. Prerequisite, B.A. 154. Designed to develop skill in the planning and control of merchandise stocks. Deals with buying policies, pricing, dollar and unit control procedures, mark-up and mark-down policies, merchandise budgeting, and the gross margin-expense-net earnings relationships.

B.A. 156. Marketing Research Methods (3).

Second semester. Prerequisites, B.A. 130 and B.A. 150. This course is intended to develop skill in the use of scientific methods in the acquisition, analysis and interpretation of marketing data. It covers the specialized fields of marketing research, the planning of survey projects, sample design, tabulation procedure and and reporte preparation.

B.A. 157. Foreign Trade Procedure (3).

Prerequisite, B.A. 150 and senior standing. Functions of various exporting agencies; documents and procedures used in exporting and importing transactions. Methods of procuring goods in foreign countries; financing of import shipments; clearing through the customs districts; and distribution of goods in the United States.

B.A. 158. Advertising Problems (3).

Second semester. Prerequisites, B.A. 151. This course is devoted to the application of advertising skills for the purpose of conducting advertising campaigns scaled to specific marketing needs and financial resources. It combines sound principles with laboratory techniques; familiarizes the student with the price structure, technical needs, and problems of effective presentation for newspapers, magazines, radio, television, and other media.

B.A. 159. Newspaper Advertising (3).

Second semester. Prerequisite, B.A. 151. A study of the problems of newspaper advertising with special attention to the needs of retail business. The course covers layout, production methods, sales techniques, and classified advertising. Students are encouraged to work in the advertising departments of campus and nearby publications for actual experience.

B.A. 160. Personnel Management (3).

Prerequisite, Econ. 160. This course deals with the problems of directing and supervising employees under modern industrial conditions. Two phases of personnel administration are stressed, the application of scientific management and the importance of human relation in this field.

B.A. 163. Industrial Relations (3).

Second semester. Prerequisite, Econ. 160 and senior standing. A study of the development and methods of organized groups in industry with reference to the settlement of labor disputes. An economic and legal analysis of labor union and employer association activities, arbitration, mediation, and conciliation; collective bargaining, trade agreements, strikes, boycotts, lockouts, company unions, employee representation, and injunctions.

B.A. 164. Recent Labor Legislation and Court Decisions (3).

First semester. Prerequisite, B.A. 160 and senior standing. Case method analysis of the modern law of industrial relations. Cases include the decisions of administrative agencies, courts and arbitration tribunals.

B.A. 165. Office Management (3).

First and second semesters. Prerequisite, junior standing. Considers the application of the principles of scientific management in their application to office work.

B.A. 166. Business Communications (3).

First and second semesters. Prerequisite, junior standing. A systematic study of the principles of effective written communications in business. The fundamental aim is to develop the ability to write clear, correct, concise, and persuasive business letters and reports.

B.A. 167. Job Evaluation and Merit Rating (2).

First semester. Prerequisite, B.A. 160, B.A. 169 and Senior standing. The investigation of the leading job evaluation plans used in industry, study of the development and administrative procedures, analyzing jobs and writing job descriptions, setting up a job evaluation plan, and relating job evaluation to pay scales. Study of various employee merit rating programs, the methods of merit rating, and the uses of merit rating.

B.A. 168. Advanced Office Management (3).

Second semester. Prerequisite, B.A. 165 and junior standing. A study of the policies, systems, practices used to promote the effective utilization of the office functions. Among the subjects studied will be organization, standards determination, procedures, scheduling, layout, and process charting. The above techniques will be used in analyzing, evaluating, and improving the office methods found in several actual business cases.

B.A. 169. Industrial Management (3).

Both semesters. Prerequisite, B.A. 11. Studies the operation of a manufacturing enterprise. Among the topics covered are product development, plant location, plant layout, production planning and control, methods analysis, time study, job analysis, budgetary control, standard costs, and problems of supervision.

B.A. 170. Transportation Services and Regulation (3).

Prerequisite, Econ. 32 or 37. A general course covering the five fields of transportation, their development, service and regulation. (This course is a prerequisite for all other transportation courses.)

B.A. 171. Industrial and Commercial Traffic Management (3).

Prerequisite, B.A. 170. Covers the details of classification and rate construction for ground and air transportation. Actual experiences in handling tariffs and classifications is provided. It is designed for students interested in the practical aspects of shipping and receiving and is required for all majors in Transportation Administration.

B.A. 172. Motor Transportation (3).

Prerequisite, B.A. 170. The place of the motor transport industry, development, uses in distribution, competitive situations, organization, regulation.

B.A. 173. Overseas Shipping (3).

Prerequisite, B.A. 170. The ocean carrier, development of services, types, trade routes, company organization, ship brokers and freight forwarders, the American Merchant Marine as a factor in national activity.

B.A. 174. Commercial Air Transportation (3).

Prerequisite, B.A. 170. The air transportation system of the United States; airways, airports, airlines. Federal regulation of air transportation. Problems and services of commercial air transportation; economics, equipment, operations, financing, selling of passenger and cargo services. Air mail development and services.

B.A. 175. Airline Administration (3).

Prerequisite, B.A. 174. Practices, systems and methods of airline management; actual work in handling details and forms required in planning and directing maintenance, operations, accounting and traffic transactions, study of airline operations and other manuals of various companies.

B.A. 176. Problems in Airport Management (3).

Prerequisite, B.A. 174. Airports classified, aviation interests and community needs, airport planning, construction, building problems. Airports and the courts. Management, financing, operations, revenue sources.

B.A. 177. Motion Economy and Time Study (3).

Second semester. Prerequisite, B.A. 169 and Senior standing. A study of the principles of motion economy, simo charts, micromotion study, the fundamentals of time study, job evaluation, observations, standard times, allowances, formula construction and wage payment plans.

B.A. 178. Production Planning and Control (2).

First semester. Prerequisite, B.A. 169 and Senior standing. An analysis of the man-, material-, and machine requirements for production according to the several types of manufacture. The development and application of inventory records, load charts, production orders, schedules, production reports, progress reports and control reports. One lecture period and one laboratory period each week.

B.A. 179. Problems in Supervision (3).

Prerequisite, B.A. 160, B.A. 169 and Senior standing. A case study course in problems of management and administration with emphasis upon analysis and reasoning applied toward a solution.

B.A. 180, 181. Business Law (4, 4).

First and second semesters. Prerequisite, senior standing. Required in all Bus. Org. curriculums. Legal aspects of business relationships, contracts, negotiable instruments, agency, partnerships, corporations, real and personal property, and sales.

B.A. 184 Public Utilities (3).

Prerequisite Econ. 32 or 37 and senior standing. Using the regulated industries as specific examples attention is focused on broad and general problems in such diverse fields as constitutional law, administrative law, public administration, government control of business, advanced economic theory, accounting, valuation and depreciation, taxation, finance, engineering and management.

B.A. 189. Business and Government (3).

Second semester. Prerequisite, Econ. 32 or 37. Senior standing. A study of the role of government in modern economic life. Social control of business as a remedy for the abuses of business enterprise arising from the decline of competition. Criteria of and limitations on government regulation of private enterprise.

B.A. 190. Life Insurance (3).

First semester. Prerequisite, Econ. 32 or 37. A general survey of life insurance: Its institutional development, selection of risks, mathematical calculations, contract provisions, kinds of policies, their functional uses, industrial and group contracts and government supervision.

B.A. 191. Property Insurance (3).

Second semester. Prerequisite, Econ. 32 or 37. A study of the insurance coverages written to protect individuals and businesses; fire, extended coverage, business interruption, automobile, liability, fidelity, surety, inland marine and ocean marine. Hazards, rate-making, legal principles, standard forms and business practices are discussed.

B.A. 194. Insurance Agency Management (3).

First semester. Prerequisite B.A. 190 or 191. This course deals with the more practical problems and policies of the insurance agent, manager, or broker; the management of his own organization and its relations with the public and home offices. Advanced topics in life insurance and additional coverages in property insurance are considered also.

B.A. 195. Real Estate Principles (3).

First semester. Prerequisite, Econ. 32 or 37. The course covers the nature and uses of real estate, real estate as a business, basic legal principles, construction problems and home ownership, city planning, and public control and ownership of real estate.

B.A. 196. Real Estate Finance (3).

Second semester. Prerequisite, Econ. 32 or 37. This course includes consideration of the factors influencing real estate values, methods and techniques in the general appraisal of real estate by brokers and professional appraisers, and general problems in real estate financing.

B.A. 197. Real Estate Management (3).

Second semester. Prerequisite, B.A. 195 or 196. A study of mortgage banking in its relation to real estate operations, various financial institutions, and the general economy; and a study of real property management with its responsibilities to owners, tenants, employees, and the public.

For Graduates

(Graduate standing and consent of instructor required.)

B.A. 210. Advanced Accounting Theory (2-3).

Prerequisite B.A. 111 and graduate standing.

B.A. 220. Managerial Accounting (3).**B.A. 221, 222. Seminar in Accounting**
(Arranged.)**B.A. 226. Accounting Systems (3).****B.A. 228. Research in Accounting.**
(Arranged.)

B.A. 229. Studies of Special Problems in the Fields of Control and Organization.

(Arranged.)

B.A. 240. Seminar in Financial Management (1-3).

Prerequisites, Ec. 140, B.A. 21, B.A. 140.

B.A. 249. Studies of Special Problems in the Field of Financial Administration.

(Arranged.)

B.A. 250. Problems in Sales Management (3).

B.A. 251. Problems in Advertising (3).

B.A. 252. Problems in Retail Store Management (3).

B.A. 257. Seminar in Marketing Management.

(Arranged.)

B.A. 258. Research Problems in Marketing.

(Arranged.)

B.A. 262. Seminar in Contemporary Trends in Labor Relations.

(Arranged.)

B.A. 265. Development and Trends in Industrial Management (3).

B.A. 266. Research in Personal Management.

(Arranged.)

B.A. 267. Research in Industrial Relations.

(Arranged.)

B.A. 269. Studies in Special Problems in Employer-Employee Relationships.

(Arranged.)

B.A. 270. Seminar in Air Transportation (3).

B.A. 271. Theory of Organization (3).

B.A. 275. Seminar in Motor Transportation (3).

B.A. 277. Seminar in Transportation (3).

B.A. 280. Seminar in Business and Government Relations.

(Arranged.)

B.A. 284. Seminar in Public Utilities (3).

B.A. 290. Seminar in Insurance (3).

B.A. 295. Seminar in Real Estate (3).

B.A. 299. Thesis.

(Arranged.)

ECONOMICS

Professors Dillard, Gruchy; Lecturer Edminster; Associate Professors Grayson, Gurley, Hamberg; Assistant Professors Dalton, Measday, Shelby, Smith, Yeager; Instructors Dawson, Day, Dodge.

Econ. 4, 5. Economic Developments (2, 2).

First and second semesters. Freshman requirements in Business Administration Curriculums. An introduction to modern economic institutions—their origins, development, and present status. Commercial revolution, industrial revolution, and age of mass production. Emphasis on developments in England, Western Europe and the United States. (Dillard and Staff.)

Econ. 31, 32. Principles of Economics (3, 3).

First and second semesters. Prerequisite, sophomore standing. Required in the Business Administration Curriculums. A general analysis of the functioning of the economic system. A considerable portion of the course is devoted to a study of basic concepts and explanatory principles. The remainder deals with the major problems of the economic system. (Grayson and Staff.)

Econ. 37. Fundamentals of Economics (3).

First and second semesters. Not open to students who have credit in Econ. 31 and 32. Not open to freshmen or to B. P. A. students. A survey of the general principles underlying economic activity. This is the basic course in Economics for the American Civilization program for students who are unable to take the more complete course provided in Economics 31 and 32. (Smith and Staff.)

For Advanced Undergraduates and Graduates

Econ. 131. Comparative Economic Systems (3).

First and second semesters. Prerequisite, Econ. 32 or 37. An investigation of the theory and practice of various types of economic systems. The course begins with an examination and evaluation of the capitalistic system and is followed by an analysis of alternative types of economic systems such as fascism, socialism, and communism. (Gruchy.)

Econ. 132. Advanced Economic Principles (3).

First and second semesters. Prerequisite, Econ. 32. Required for Economics majors. This course is an analysis of price and distribution theory with special attention to recent developments in the theory of imperfect competition. (Grayson.)

Econ. 134. Contemporary Economic Thought (3).

First semester. Prerequisite, Econ. 32 and senior standing. A survey of recent trends in American, English, and Continental Economic thought with special attention to the work of such economists as W. C. Mitchell, J. R. Commons, T. Veblen, W. Sombart, J. A. Hobson and other contributors to the development of economic thought since 1900. (Gruchy.)

Econ. 136. International Economic Policies and Relations (3).

First semester. Prerequisite, Econ. 32 or 37. A descriptive and theoretical analysis of international trade. Full consideration is given to contemporary problems facing international trade and to the impact of governmental policy upon international commercial relations. (Yeager.)

Econ. 137. The Economics of National Planning (3).

Second semester. Prerequisite, Econ. 32 or 37. An analysis of the principles and practice of economic planning with special reference to the planning problems of Great Britain, Russia, and the United States. (Gruchy.)

Econ. 138. Economics of the Soviet Union (3).

Second Semester. Prerequisite, Econ. 32 or 37. An analysis of the organization, operating principles and performance of the Soviet economy with attention to the historical and ideological background, planning, resources, industry, agriculture, domestic and foreign trade, finance, labor, and the structure and growth of national income.

Econ. 140. Money and Banking (3).

First and second semesters. Prerequisite, Econ 32 or 37. A study of the organization, functions, and operation of our monetary, credit, and banking system; the relation of commercial banking to the Federal Reserve System; the relation of money and credit to prices; domestic and foreign exchange and the impact of public policy upon banking and credit. (Gurley and Staff.)

Econ. 141. Theory of Money, Credit, and Prices (3).

Second semester. Prerequisites, Econ. 32 and 140. A study of recent domestic and international monetary policies, their objectives and theoretical foundations. (Gurley.)

Econ. 142. Public Finance and Taxation (3).

First and second semesters. Prerequisite, Econ. 32 or 37. A study of government fiscal policy with special emphasis upon sources of public revenue, the tax system, government budgets, and the public debt. (Grayson.)

Econ. 147. Business Cycles (3).

First semester. Prerequisite, Econ. 140. A study of the causes of depressions and unemployment, cyclical and secular instability, theories of business cycles, and the problem of controlling economic instability. (Hamberg.)

Econ. 149. International Finance and Exchange (3).

Second semester. Prerequisite, Econ. 140; Econ. 136 and 141 recommended. This course considers the theory and practice of international finance and exchange. The increased importance of public authority in foreign trade, international policies, and finance is given due emphasis. (Yeager.)

Econ. 160. Labor Economics (3).

First and second semesters. Prerequisite, Econ. 32 or 37. The historical development and chief characteristics of the American labor movement are first surveyed. Present-day problems are then examined in detail: wage theories, unemployment, social security, labor organization, and collective bargaining. (Dalton, Measday, Smith.)

Econ. 170. Monopoly and Competition (3).

Second semester. Prerequisite, Econ. 32 or 37. Changing structure of the American economy; price policies in different industrial classifications of monopoly and competition in relation to problems of public policy. (Smith.)

Econ. 171. Economics of American Industries (3).

Second semester. Prerequisite, Econ. 32 or 37. A study of the technology, economics and geography of twenty representative American industries. (Clemens.)

For Graduates**Econ. 200. Micro-Economic Analysis (3).**

Second semester. Prerequisite, Econ. 132. Price, output, and distribution analysis as developed by Chamberlin, Triffin, Hicks, and others; econometric methods including Leontief input-output techniques of inter-industry analysis. Considerable attention is given to contributions in periodicals. (Grayson.)

Econ. 202. Macro-Economic Analysis (3).

First semester. Prerequisite, Econ. 132. National income accounting; determination of national income and employment especially as related to the modern theory of effective demand; consumption function; multiplier and acceleration principles; the role of money as it affects output and employment as a whole; cyclical fluctuations. (Dillard.)

Econ. 204, 205. Seminar in Economic Development (3, 3).

First and second semesters. Historical and theoretical analysis of the major factors which influence economic development; comparisons between more developed and less developed areas; policies and techniques which hasten economic development.

Econ. 230. History of Economic Thought (3).

First semester. Prerequisite, Econ. 132 or consent of instructor. A study of the development of economic thought and theories including the Greeks, Romans, canonists, mercantilists, physiocrats, Adam Smith, Malthus, Ricardo. Relation of ideas to economic policy. (Dillard.)

Econ. 231. Economic Theory in the Nineteenth Century (3).

Second semester. Prerequisite, Econ. 230 or consent of the instructor. A study of various nineteenth and twentieth century schools of economic thought, particularly the classicists, neo-classicists, Austrians, German historical school, American economic thought and the socialists. (Dillard.)

Econ. 232, 233. Seminar in Institutional Economic Theory (3, 3).

First and second semesters. A study of recent developments in the field of institutional economic theory in the United States and abroad. (Gruchy.)

Econ. 236. Seminar in International Economic Relations (3).

(Arranged.) A study of selected problems in International Economic Relations. (Yeager.)

Econ. 237. Seminar in Economic Investigation (3).**Econ. 240. Seminar in Monetary Theory and Policy (3).**

Theories of money, prices, and national income with emphasis on recent developments. Monetary theories of income fluctuations. Domestic and international monetary policies. (Gurley.)

Econ. 247. Economic Growth and Instability (3).

Second semester. An analytical study of long-term economic growth in relation to short-term cyclical instability. Attention is concentrated on the connection between accumulation of capital and the capital requirements of secular growth and business cycles. Earlier writings as well as recent growth models are considered. (Hlamberg.)

Econ. 270. Seminar in Economics and Geography of American Industries (3).

(Arranged.)

(Clemens.)

Econ. 299. Thesis.

(Arranged.)

GEOGRAPHY

Professors Van Royen, Hu; Consulting Professors Roterus, Whipple; Lecturers with rank of Professor Lemons, McBryde; Associate Professors Patton, Augelli; Assistant Professors Ahnert, Hooson, Karinen; Instructors Deshler, Sas; Research Associate Battersby; Research Assistants Salomé and Merrens.

Geog. 1, 2. Economic Resources (2, 2).

First and second semesters. One lecture and one two-hour laboratory period a week for Geog. 1; two lecture periods for Geog. 2. Freshman requirements in the Business Administration Curriculums. General comparative study of the geographic factors underlying production economies. Emphasis upon climate, soils, land forms, agricultural products, power resources, and major minerals, concluding with brief survey of geography of commerce and manufacturing. (Deshler and Staff.)

Geog. 10, 11. General Geography (3, 3).

First and second semesters. Required of all majors in geography; recommended for all minors; Geog. 10 is suggested for students of Arts and Sciences, Education and others who may desire a background in geography and its application to problems of their respective fields. Introduction to geography as a field of study. A survey of the content, philosophy, techniques, and application of geography and its significance for the understanding of world problems. (Augelli.)

Geog. 20, 21. Economic Geography (3, 3).

(Not offered on College Park campus.)

Geog. 30. Principles of Morphology (3).

First semester. A study of the physical features of the earth's surface and their geographic distribution, including subordinate land forms. Major morphological processes, the development of land forms, and the relationships between various types of land forms and land use problems. (Ahnert)

Geog. 35. Map Interpretation and Map Problems (3).

First or second semester. Interpretation of landforms and man-made features on American and foreign maps. Functions, use, and limitations of various types of maps, with emphasis upon topographic maps. Problems of use and interpretation. (Ahnert)

Geog. 40. Principles of Meteorology (3).

First semester. An introductory study of the weather. Properties and conditions of the atmosphere, and methods of measurement. The atmosphere circulation and conditions responsible for various types of weather and their geographic distribution patterns. Practical applications. (Sas.)

Geog. 41. Introductory Climatology (3).

Second semester. Prerequisite, Geog. 40, or permission of the instructor. Climatic elements and their controls, the classification and distribution of world climates and relevance of climatic differences to human activities. (Sas.)

Geog. 42S. Weather and Climate (2).

Summer only. Permission of instructor. An introduction to the principal causes of the weather and the major types of climate, with special emphasis upon North America.

Geog. 100. Regional Geography of Eastern Anglo-America (3).

First semester. Prerequisite, Geog. 1, 2 or Geog. 10, or permission of the instructor. A study of the cultural and economic geography and the geographic regions of Eastern United States and Canada, including an analysis of the significance of the physical basis for present-day diversification of development, and the historical geographic background. (Patton.)

Geog. 101. Regional Geography of Western Anglo-America (3).

Second semester. Prerequisite, Geog. 1, 2 or Geog. 10, or permission of the instructor. A study of Western United States, Western Canada and Alaska along the lines mentioned under Geog. 100. (Patton.)

Geog. 102S. Geography of the United States (2).

Summer only. Permission of instructor. A general study of the regions and resources of the United States in relation to agricultural and industrial development and to present-day national problems.

Geog. 103. Geographic Concepts and Source Materials (2).

First semester. A comprehensive and systematic survey of geographic concepts designed exclusively for teachers. Stress will be placed upon the philosophy of geography in relation to the social and physical sciences, the use of the primary tools of geography, source materials, and the problems of presenting geographic principles.

Geog. 104. Geography of Major World Regions (2).

Second semester. A geographic analysis of the patterns, problems, and prospects of the world's principal human-geographic regions, including Europe, Anglo-America, the Soviet Union, the Far East, and Latin America. Emphasis upon the causal factors of differentiation and the role geographic differences play in the interpretation of the current world scene. This course is designed especially for teachers.

Geog. 105. Geography of Maryland and adjacent areas (3).

First and second semester. Prerequisite, permission of the instructor. An analysis of the physical environment, natural resources, and population in relation to agriculture, industry, transport, and trade in the state of Maryland and adjacent areas. (Patton.)

Geog. 106S. Geography of Maryland (2).

Summer only. Permission of instructor. The geographic regions of Maryland and their principal characteristics, especially in relation to the development of home studies and other projects.

Geog. 110. Economic and Cultural Geography of Caribbean America (3).

First semester. An analysis of the physical framework, broad economic and historical trends, cultural patterns, and regional diversification of Mexico, Central America, the West Indies, and parts of Colombia and Venezuela. (Augelli.)

Geog. 111. Economic and Cultural Geography of South America (3).

Second semester. A survey of natural environment and resources, economic development and cultural diversity of the South American republics, with emphasis upon problems and prospects of the countries. (Augelli.)

Geog. 120. Economic Geography of Europe (3).

First semester. The natural resources of Europe in relation to agricultural and industrial development and to present-day economic and national problems.

(Hooson, Van Royen.)

Geog. 122. Economic Resources and Development of Africa (3).

Second semester. The natural resources of Africa in relation to agricultural and mineral production; the various stages of economic development and the potentialities of the future. (Van Royen.)

Geog. 123. Problems of Colonial Geography (3).

First or second semester. Problems of development of colonial areas, with special emphasis upon the development of tropical regions and the possibilities of white settlement in the tropics.

Geog. 130, 131. Economic and Political Geography of Southern and Eastern Asia (3, 3).

First and second semesters. A study of China, Japan, India, Burma, Indo-China, and the East Indies; natural resources, population, and economic activities. Comparisons of physical and human potentialities of major regions and of their economic, social and political development. (Hu.)

Geog. 134, 135. Cultural Geography of East Asia (3, 3).

First and second semesters. A comprehensive and systematic survey of the geographical distribution and interpretation of the major racial groups and cultural patterns of China, Japan, and Korea. Special emphasis will be placed on the unique characteristics of the peoples of these areas, their basic cultural institutions, outlooks on life, contemporary problems, and trends of cultural change. Designed especially for students of the social sciences, and those preparing for careers in foreign service, foreign trade, education, and international relations. (Hu.)

Geog. 140. Soviet Lands (3).

First or second semester. The natural environment and its regional diversity. Geographic factors in the expansion of the Russian State. The geography of agricultural and industrial production, in relation to available resources, transportation problems, and diversity of population. (Hooson.)

Geog. 146. The Near East (3).

First semester or second semester. The physical, economic, political, and strategic geography of the lands between the Mediterranean and India.

Geog. 150. History and Theory of Cartography (3).

Second semester. The development of maps throughout history. Geographical orientation, coordinates, and map scales. Map projections, their nature, use and limitations. Principles of representation of features on physical and cultural maps. Modern uses of maps and relationships between characteristics of maps and use types. (McBryde.)

Geog. 151, 152. Cartography and Graphics Practicum (3, 3).

First and second semesters. One hour lecture and two two-hour laboratory periods a week. Techniques and problems of compilation, design, and construction of various types of maps and graphs. Relationships between map making and modern methods of production and reproduction. Trips to representative plants. Laboratory work directed toward cartographic problems encountered in the making of non-topographic maps. (Karinen.)

Geog. 153. Problems of Cartographic Representation and Procedure (3).

First or second semester. Two hours lecture and two hours laboratory a week. Study of cartographic compilation methods. Principles and problems of symbolization, classification, and representation of map data. Problems of representation of features at different scales and for different purposes. Place-name selection and lettering; stick-up and map composition. (Karinen.)

Geog. 154. Problems of Map Evaluation (3).

First or second semester. Two hours lecture and two hours laboratory a week. Schools of topographic concepts and practices. Theoretical and practical means of determining map reliability, map utility, and source materials. Nature, status, and problems of topographic mapping in different parts of the world. Non-topographic special use maps. Criteria of usefulness for purposes concerned and of reliability. (Karinen.)

Geog. 155. Problems and Practices of Photo Interpretation (3).

First or second semester. Two hours of lecture and two hours of laboratory per week. Interpretation of aerial photographs with emphasis on the recognition of landforms of different types and man-made features. Study of vegetation, soil, and other data that may be derived from aerial photographs. Types of aerial photographs and limitations of photo interpretation. (Abnert.)

Geog. 160. Advanced Economic Geography I. Agricultural Resources (3).

First semester. Prerequisite, Geog. 1 and 2 or Geog. 10. The nature of agricultural resources, the major types of agricultural exploitation in the world, and the geographic distribution of certain major crops and animals in relation to the physical environment and economic geographic conditions. Main problems of conservation. (Van Royen.)

Geog. 161. Advanced Economic Geography II. Mineral Resources (3).

Second semester. Prerequisite, Geog. 1 and 2, or Geog. 10. The nature and geographic distribution of the principal power, metallic, and other minerals. Economic geographic aspects of modes of exploitation. Consequences of geographic distribution and problems of conservation. (Van Royen.)

Geog. 170. Local Field Course (3).

First semester. Training in geographic field methods and techniques. Field observation of land use in selected rural and urban areas in eastern Maryland. One lecture per week with Saturday and occasional weekend field trips. Primarily for undergraduates. (Ahnert.)

Geog. 180. History, Nature and Methodology of Geography (3).

First semester. A comprehensive and systematic study of the history, nature, and basic principles of geography, with special reference to the major schools of geographic thought; a critical evaluation of some of the important geographical works and methods of geographic research. (Hu.)

Geog. 190. Political Geography (3).

Second semester. Geographical factors in national power and international relations; an analysis of the role of "Geopolitics" and "Geostrategy," with special reference to the current world scene. (Angelli.)

Geog. 195. Geography of Transportation (3).

Second semester. The distribution of transport routes on the earth's surface; patterns of transport routes; the adjustment of transport routes and media to conditions of the natural environment centers and their distribution. (Patton.)

Geog. 197. Urban Geography (3).

First semester. Origins of cities, followed by a study of elements of site and location with reference to cities. The patterns and functions of some major world cities will be analyzed. Theories of land use differentiation within cities will be appraised. (Patton.)

Geog. 199. Topical Investigations (1-3).

First and second semesters. Independent study under individual guidance. Choice of subject matter requires joint approval of adviser and head of the Department of Geography. Restricted to advanced undergraduate students with credit for at least 24 hours of geography. (Staff.)

Geog. 200. Field Course (3).

Field work in September, conferences and reports during first semester. Practical experience in conducting geographic field studies. Intensive training in field methods and techniques and in the preparation of reports. For graduate students in geography. Open to other students by special permission of the head of the Department of Geography. (Staff.)

For Graduates**Geog. 210, 221. Seminar in the Geography of Latin America (3, 3).**

First and second semesters. An analysis of recent changes and trends in industrial development, exploitation of mineral resources, and land utilization. Prerequisite, Geog. 110, 111 or consent of instructor. (McBryde.)

Geog. 220, 221. Seminar in the Geography of Europe and Africa (3, 3).

First and second semesters. Analysis of special problems concerning the resources and development of Europe and Africa. Prerequisite, Geog. 120 or 122, or consent of instructor. (Van Royen.)

Geog. 230, 231. Seminar in the Geography of East Asia (3, 3).

First and second semesters. Analysis of problems concerning the geography of East Asia with emphasis on special research methods and techniques applicable to the problems of this area. (Hu.)

Geog. 240, 241. Seminar in the Geography of the U.S.S.R. (3, 3).

First and second semesters. Investigation of special aspects of Soviet geography. Emphasis on the use of Soviet materials. Prerequisite, reading knowledge of Russian and Geog. 140, or consent of instructor.

Geog. 246. Seminar in the Geography of the Near East (3).

First and second semesters.

Geog. 250. Seminar in Cartography (credit arranged).

First or second semester. The historical and mathematical background of cartographic concepts, practices, and problems, and the various philosophical and practical approaches to cartography. Discussions will be supplemented by the presentation of specific cartographic problems investigated by the students. (Mc Bryde and Karinen.)

Geog. 260. Advanced General Climatology (3).

First semester. Prerequisite, Geog. 41, or consent of instructor. Advanced study of elements and controls of the earth's climates. Principles of climatic classification. Special analysis of certain climatic types. (Lemons.)

Geog. 261. Applied Climatology (3).

Second semester. Prerequisite, Geog. 41, or consent of instructor. Study of principles, techniques, and data of micro-climatology, physical and regional climatology relating to such problems and fields as transportation, agriculture, industry, urban planning, human comfort, and regional geographic analysis. (Lemons.)

Geog. 262, 263. Seminar in Meteorology and Climatology (3, 3).

First and second semesters. Prerequisite, consent of instructor. Selected topics in meteorology and climatology chosen to fit the individual needs of advanced students. (Lemons.)

Geog. 280. Geomorphology (3).

Second semester. An advanced comparative study of selected geomorphic processes and land forms; theories of land forms evolution and geomorphological problems. (Van Royen.)

Geog. 290, 291. Selected Topics in Geography (1-3).

First and second semesters. Readings and discussion on selected topics in the field of geography. To be taken only with joint consent of adviser and head of the Department of Geography. (Staff.)

Geog. 292, 293. Dissertation Research.

(Credit to be arranged)—First and second semesters and summer.

(Staff.)

GOVERNMENT AND POLITICS

Professors Plischke, Burdette, Steinmeyer, and Wengert; Assistant Professors Anderson, Harrison, and Hathorn; Instructors Alford, Hester, Hohenstein, Lefever, and Van Eekeren.

G. and P. 1. American Government (3).

Each semester. This course is designed as the basic course in government for the American Civilization program, and it or its equivalent is a prerequisite to all other courses in the Department. It is a comprehensive study of governments in the United States—national, state, and local.

G. and P. 4. State Government and Administration (3).

First semester. Prerequisite, G. & P. 1. A study of the organization and functions of state government in the United States, with special emphasis upon the government of Maryland.

G. and P. 5. Local Government and Administration (3).

Second semester. Prerequisite, G. & P. 1. A study of the organization and functions of local government in the United States, with special emphasis upon the government of Maryland cities and counties.

G. and P. 7. The Government of the British Commonwealth (2).

First semester. Prerequisite, G. & P. 1. A study of the governments of the United Kingdom and the British Dominions.

G. and P. 8. The Governments of Continental Europe (2).

Second semester. Prerequisite, G. & P. 1. A comparative study of the governments of France, Switzerland, Italy, Germany, and the Scandinavian countries.

G. and P. 9. The Governments of Latin America (2).

First semester. Prerequisite, G. & P. 1. A comparative study of Latin American governments, with special emphasis on Argentina, Brazil, Chile, and Mexico.

G. and P. 10. The Governments of the Far East (2).

Second semester. Prerequisite, G. & P. 1. A study of the governments of China and Japan.

G. and P. 11. The Government and Administration of the Soviet Union (3).

Prerequisite, G. & P. 1. A study of the adoption of the Communist philosophy by the Soviet Union, of its governmental structure, and of the administration of government policy in the Soviet Union.

G. and P. 97. Major Foreign Governments (3).

Prerequisite, G. and P. 1. An examination of characteristic governmental institutions and political processes in selected major powers, such as Britain, Russia, France, Germany, Italy, Japan, and China. Students may not receive credit in this course and also obtain credit in G. & P. 7, 8, or 10.

For Advanced Undergraduates and Graduates

G. and P. 101. International Political Relations (3).

First semester. Prerequisite, G. & P. 1. A study of the major factors underlying international relations, the influence of geography, climate, nationalism, and imperialism, and the development of foreign policies of the major powers.

G. and P. 102. International Law (3).

Second semester. Prerequisite, G. & P. 1. Fundamental principles governing the relation of states, including matters of jurisdiction over landed territory, water, airspace, and persons; treatment of aliens; treaty-making; diplomacy; and the laws of war and neutrality.

G. and P. 104. Inter-American Relations (3).

Prerequisite, G. & P. 1. An analytical and historical study of the Latin-American policies of the United States and of problems in our relations with individual countries, with emphasis on recent developments.

G. and P. 105. Recent Far Eastern Politics (3).

First semester. Prerequisite, G. & P. 1. The background and interpretation of recent political events in the Far East and their influence on world politics.

G. and P. 106. American Foreign Relations (3).

First semester. Prerequisite, G. & P. 1. The principles and machinery of the conduct of American foreign relations, with emphasis on the Department of State and the Foreign Service, and an analysis of the major foreign policies of the United States.

G. and P. 108. International Organization (3).

Second semester. Prerequisite, G. & P. 1. A study of the objectives, structure, functions, and procedures of international organizations, including the United Nations as well as functional and regional organizations as the Organization of American States.

G. and P. 110. Principles of Public Administration (3).

First semester. Prerequisite, G. & P. 1. A study of public administration in the United States, giving special attention to the principles of organization and management and to fiscal, personnel, planning, and public relations practices.

G. and P. 111. Public Personnel Administration (3).

First semester. Prerequisite, G. & P. 110 or B.A. 160. A survey of public personnel administration, including the development of merit civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee relations, and retirement.

G. and P. 112. Public Financial Administration (3).

Second semester. Prerequisite, G. & P. 110 or Econ. 142. A survey of governmental financial procedures, including processes of current and capital budgeting, the administration of public borrowing, the techniques of public purchasing, and the machinery of control through pre-audit and post-audit.

G. and P. 124. Legislatures and Legislation (3).

Second semester. Prerequisite, G. & P. 1. A comprehensive study of legislative organization, procedure, and problems. The course includes opportunities for student contact with Congress and with the Legislature of Maryland.

G. and P. 131, 132. Constitutional Law (3, 3).

First and second semesters. Prerequisite, G. & P. 1. A systematic inquiry into the general principles of the American constitutional system, with special reference to the role of the judiciary in the interpretation and enforcement of the federal constitution; the position of the states in the federal system; state and federal powers over commerce; due process of law and other civil rights.

G. and P. 133. Administration of Justice (3).

Second semester. Prerequisite, G. & P. 1. An examination of civil and criminal court structure and procedures in the United States at all levels of government, with special emphasis upon the federal judiciary.

G. and P. 141. History of Political Theory (3).

First semester. Prerequisite, G. & P. 1. A survey of the principal political theories set forth in the works of writers from Plato to Bentham.

G. and P. 142. Recent Political Theory (3).

Second semester. Prerequisite, G. & P. 1. A study of 19th and 20th century political thought, with special emphasis on recent theories of socialism, communism, and fascism.

G. and P. 144. American Political Theory (3).

First semester. Prerequisite, G. & P. 1. A study of the development and growth of American political concepts from the colonial period to the present.

G. and P. 154. Problems of World Politics (3).

Second semester. Prerequisite, G. & P. 1. A study of governmental problems of international scope, such as causes of war, problems of neutrality, and propaganda. Students are required to report on readings from current literature.

G. and P. 174. Political Parties (3).

First semester. Prerequisite, G. & P. 1. A descriptive and analytical examination of American political parties, nominations, elections, and political leadership.

G. and P. 178. Public Opinion (3).

First semester. Prerequisite, G. & P. 1. An examination of public opinion and its effect on political action, with emphasis on opinion formation and measurement, propaganda, and pressure groups.

G. and P. 181. Administrative Law (3).

Second semester. Prerequisite, G. & P. 1. A study of the discretion exercised by administrative agencies, including analysis of their functions, their powers over persons and property, their procedures, and judicial sanctions and controls.

G. and P. 197. Comparative Governmental Institutions (3).

Second semester. Prerequisites, G. & P. 1. A study of major political institutions, such as legislatures, executives, courts, administrative systems, and political parties, in selected foreign governments.

For Graduates**G. and P. 201. Seminar in International Political Organization (3).**

A study of the forms and functions of various international organizations.

G. and P. 202. Seminar in International Law (3).

Reports on selected topics assigned for individual study and reading in substantive and procedural international law.

G. and P. 205. Seminar in American Political Institutions (3).

Reports on topics assigned for individual study and reading in the background and development of American government.

G. and P. 206. Seminar in American Foreign Relations (3).

Reports on selected topics assigned for individual study and reading in American foreign policy and the conduct of American foreign relations.

G. and P. 207. Seminar in Comparative Governmental Institutions (3).

Reports on selected topics assigned for individual study and reading in governmental and political institutions in governments throughout the world.

G. and P. 211. Seminar in Federal-State Relations (3).

Reports on topics assigned for individual study and reading in the field of recent federal-state relations.

G. and P. 213. Problems of Public Administration (3).

Reports on topics assigned for individual study and reading in the field of public administration.

G. and P. 214. Problems of Public Personnel Administration (3).

Reports on topics assigned for individual study and reading in the field of public personnel administration.

G. and P. 215. Problems of State and Local Government in Maryland (3).

Reports on topics assigned for individual study in the field of Maryland state and local government.

G. and P. 216. Government Administrative Planning and Management (3).

Reports on topics assigned for individual study and reading in administrative planning and management in government.

G. and P. 217. Government Corporations and Special Purpose Authorities (3).

Reports on topics assigned for individual study and reading in the use of the corporate form for governmental administration. The topics for study will relate to the use of the corporate form as an administrative technique, as in the cases of the Tennessee Valley Authority, the Port of New York Authority, and local housing authorities.

G. and P. 221. Seminar in Public Opinion (3).

Reports on topics assigned for individual study and reading in the field of public opinion.

G. and P. 223. Seminar in Legislatures and Legislation (3).

Reports on topics assigned for individual study and reading about the composition and organization of legislatures and about the legislative process.

G. and P. 224. Seminar in Political Parties and Politics (3).

Reports on topics assigned for individual study and reading in the fields of political organization and action.

G. and P. 225. Man and the State (3).

Individual reading and reports on such recurring concepts in political theory as liberty, equality, justice, natural law and natural rights, private property, sovereignty, nationalism, and the organic state.

G. and P. 231. Seminar in Public Law (3).

Reports on topics assigned for individual study and reading in the fields of constitutional and administrative law.

G. and P. 251. Bibliography of Government and Politics (3).

Survey of the literature of the various fields of government and politics and instruction in the use of government documents.

G. and P. 252. Problems of Democracy: National (3).

Summer session only.

G. and P. 253. Problems of Democracy: International (3).

Summer session only.

G. and P. 254. Problems: National II (3).

Summer session only.

G. and P. 255. Problems of Democracy: International II (3).

Summer session only.

G. and P. 261. Problems and Politics (3).

Credit according to work accomplished.

G. and P. 281. Departmental Seminar (No Credit).

Topics as selected by the graduate staff of the department. Registration for two semesters required of all doctoral candidates. Conducted by the entire departmental staff in full meeting.

G. and P. 299. Thesis Course.

(Arranged).

JOURNALISM AND PUBLIC RELATIONS

Professor Crowell; Associate Professor Krimek; Assistant Professors Carey, Danegger; Instructors Bryan, Geraci; Lecturers Lyons, Phipps.

Journalism Courses**Journ. 10. News Reporting I (3).**

First semester. Two lectures, two laboratory periods each week. Prerequisites, Eng. 1, 2. Fundamentals of professional reporting. Laboratory time spent in writing news-story exercises assigned by instructor. Laboratory fee, \$3.00.

Journ. 11. Reporting II (3).

First semester. Two lectures, two laboratory periods each week. Prerequisite, Journ. 10. More specialized types of news stories. Laboratory fee, \$3.00.

Journ. 160. News Editing I (3).

First semester. Two lectures, two hours of laboratory each week. Prerequisite, Journ. 11. Copy editing, proofreading, headline writing. Laboratory fee, \$3.00.

Journ. 161. News Editing II (3).

Second semester. Two lectures; three hours of laboratory work on Baltimore Sun or Baltimore News-Post desk each week, arranged. Headwriting, makeup, rewriting, copy editing.

Journ. 162. Community Journalism (3).

Second semester. Two lectures; three hours of laboratory work on a weekly newspaper each week, arranged. Introduction to community and weekly newspaper.

Journ. 163. Newspaper Typography (3).

Each semester. One lecture, four hours of laboratory each week. Introduction to newspaper typography, practice in laying out and making up advertisements and newspaper pages.

Journ. 165. Feature Writing (3).

Each semester. Writing and selling of newspaper and magazine articles.

Journ. 174. Editorial Writing (2).

First semester. Theory and practice in editorial writing.

Journ. 175. Reporting of Public Affairs (3).

First semester. One lecture; three hours of laboratory time spent each week on regular beat for Baltimore Sun or Baltimore News Post, by arrangement. Advanced reporting; city, county, federal beats.

Journ. 176. Newsroom Problems (3).

First semester. Three lectures per week. Ethics, newsroom problems and policies, freedom and responsibilities of the press.

Journ. 181. Press Photography (3).

First, second semesters. One lecture, four hours of laboratory each week. Prerequisite, junior major standing in the department. Shooting, developing, printing of news and feature pictures. Equipment provided by university. Student furnishes own supplies needed in course. Laboratory fee, \$6.00, provides demonstration supplies, maintenance of cameras.

Journ. 182. Advanced Press Photography (2).

Each semester. One lecture, two hours of laboratory per week. Prerequisite, Journ. 181 or equivalent. Advanced shooting, developing, printing of news and feature pictures. Equipment provided by university. Student furnishes own supplies needed in course.

Journ. 184. Picture Editing (2).

Second semester. Prerequisite or corequisite, Journ. 181. Theories and exercises in handling pictures for the press.

Journ. 191. Law of the Press (3).

Second semester. Introduction to libel, right of privacy, fair comment and criticism, privilege, contempt by publication, Maryland press statutes.

Journ. 192. History of American Journalism (3).

First semester. Historical background of American journalism.

Public Relations Courses

P. R. 166. Public Relations (3).

First semester. Survey of public relations; general orientation, principles, techniques.

P. R. 170. Publicity Techniques (3).

First semester. Strategy and techniques of publicity operations. Orientation, practice in use of major media of public communications.

P. R. 171. Industrial Journalism (2).

First semester. Introduction to industrial communications, management and production of company publications; public relations aspects of industrial journalism.

P. R. 186. Public Relations of Government (3).

Second semester. Study of public relations, publicity, propaganda, information services in public administration.

P. R. 194. Public Relations Cases (2).

Second semester. Study of cases in public relations, with particular attention to policy formulation, strategy, ethical factors.

P. R. 195. Seminar in Public Relations (2).

Second semester. Group and individual research in public relations.

OFFICE TECHNIQUES AND MANAGEMENT

Associate Professor Patrick; Instructors O'Neill, Gera, Noyes, Freeman.

O. T. 1. Principles of Typewriting (2).

First and second semesters. Five periods per week. Laboratory fee, \$7.50. Prerequisite, consent of instructor. The goal of this course is the attainment of the ability to operate the typewriter continuously with reasonable speed and accuracy by the use of the "touch" system. This course should be completed prior to enrollment in O. T. 12, Principles of Shorthand.

O. T. 2. Intermediate Typewriting (2).

First and second semesters. Five periods per week. Laboratory fee, \$7.50. Prerequisite, minimum grade of "C" in O. T. 1 or consent of instructor. Drills for improving speed and accuracy and an introduction to office production typewriting.

O. T. 10. Office Typewriting Problems (2).

First and second semesters. Five periods per week. Laboratory fee, \$7.50. Prerequisite, minimum grade of "C" in O. T. 2 or consent of instructor. A course to develop the highest degree of accuracy and speed possible and to teach the advanced techniques of typewriting with special emphasis on production.

O. T. 12, 13. Principles of Shorthand (4, 4).

First and second semesters. Five periods per week. Prerequisite, O. T. 1, and consent of instructor. This course aims to develop the mastery of the principles of Gregg Shorthand. In O. T. 13 special emphasis is placed on developing dictation speed.

O. T. 110. Secretarial Work (3).

Second semester. Five periods per week. Prerequisite, O. T. 116 and O. T. 117 or consent of instructor. A comprehensive study of the procedures and information essential for the handling of the duties and responsibilities of an administrative assistant.

O. T. 117. Gregg Transcription (2).

First semester. Four periods per week. Laboratory fee, \$7.50. Prerequisite, minimum grade of "C" in O. T. 13 and O. T. 10 or consent of instructor. This course is to be taken concurrently with O. T. 116. A course in intensive transcriptional speed building, and in the related skills and knowledges.

O. T. 118. Gregg Shorthand Dictation (3).

Second semester. Five periods per week. Prerequisite, minimum grade of "C" in O. T. 116 and O. T. 117, or consent of instructor. Advanced principles and phrases of shorthand; dictation covering vocabularies of representative businesses.

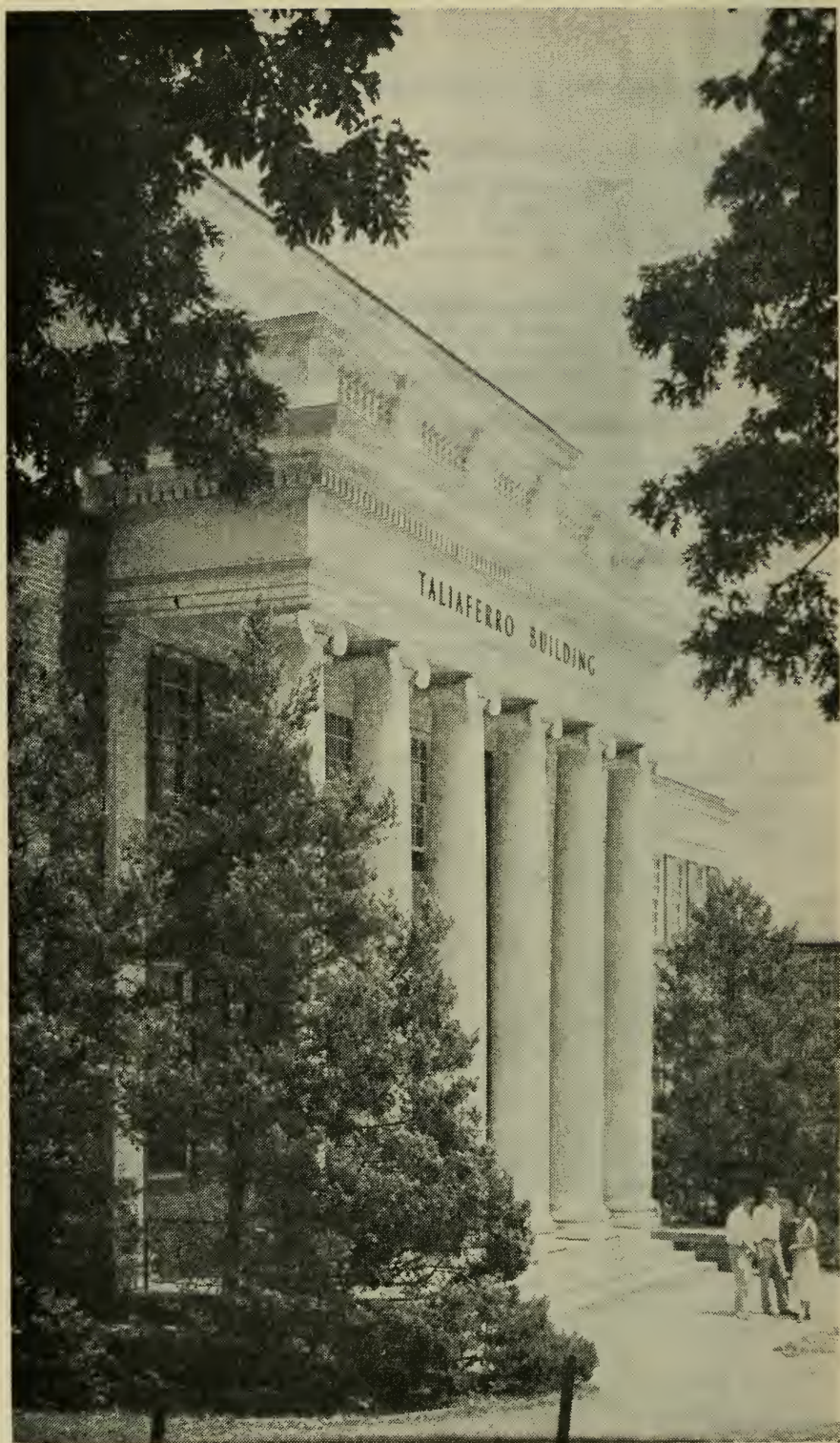
***O. T. 116. Advanced Shorthand (3).**

First semester. Five periods per week. Prerequisite, minimum grade of "C" in O. T. 13 and O. T. 2 or consent of instructor. A course in shorthand speed building; development of dictation skill to the maximum for each individual.

O. T. 114. Secretarial Office Practice (3).

First and second semesters. Six times per week. Prerequisite, senior standing and completion of O. T. 110. The purpose of this course is to give laboratory and office experience to senior students. A minimum of 90 hours of office experience under supervision is required. In addition, each student will prepare a written report on an original problem previously approved.

*O. T. 10 should be completed prior to Advanced Shorthand (O. T. 116); O. T. 116, Advanced Shorthand, and O. T. 117, Gregg Transcription, must be taken concurrently.



TALIAFERRO BUILDING. Headquarters of the College of Business and Public Administration.

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SEPARATE CATALOGS

At College Park

Individual catalogs of colleges and schools of the University of Maryland at College Park may be obtained by addressing the Office of University Relations, University of Maryland, College Park, Md.

These catalogs and schools are:

1. General Information
2. College of Agriculture
3. College of Arts and Sciences
4. College of Business and Public Administration
5. College of Education
6. College of Engineering
7. College of Home Economics
8. College of Military Science
9. College of Physical Education, Recreation and Health
10. College of Special and Continuation Studies
11. Summer School
12. Graduate School

At Baltimore

Individual catalogs for the professional schools of the University of Maryland may be obtained by addressing the Deans of the respective schools at the University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland. The professional schools are:

13. School of Dentistry
14. School of Law
15. School of Medicine
16. School of Pharmacy
17. School of Nursing

At Heidelberg

The catalog of the European Program may be obtained by addressing the Dean, College of Special and Continuation Studies, College Park, Maryland.

1957-1958

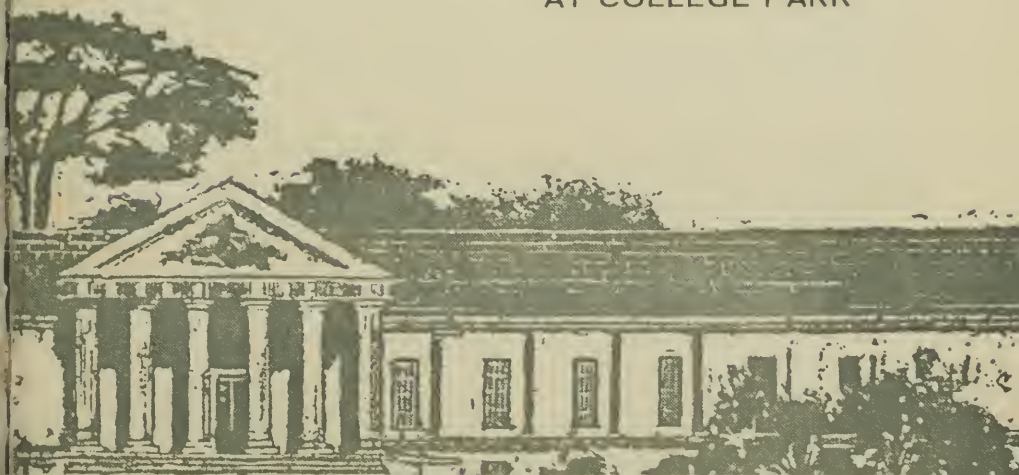


UNIVERSITY OF MARYLAND

THE COLLEGE OF

education

AT COLLEGE PARK



IMPORTANT

THE PROVISIONS of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

GENERAL INFORMATION

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, societies and special clubs, the University band, student publications, University Post Office and Supply Store, write to the Editor of Publications for the General Information issue of the Catalog.

See Outside Back Cover for List of Other Catalogs
Index on inside back cover.

Volume 9

January 5, 1957

Number 18

A University of Maryland Publication is published four times in January, February, March and April; three times in May; once in June and July; twice in August, September, October and November; and three times in December.

Re-entered at the Post Office in College Park, Maryland, as second class mail matter under the Act of Congress of August 24, 1912.



BOARD OF REGENTS AND

MARYLAND STATE BOARD OF AGRICULTURE

*Term
Expires*

CHARLES P. MCCORMICK, SR., Chairman, McCormick and Company, Inc., 414 Light Street, Baltimore 2	1957
EDWARD F. HOLTER, Vice-Chairman, The National Grange, 744 Jackson Place, N.W., Washington 6	1959
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HARRY H. NUTTLE, Treasurer, Denton.....	1966
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ENOS S. STOCKBRIDGE, 10 Light Street, Baltimore 2	1960
THOMAS B. SYMONS, Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	1963
C. EWING TUTTLE, 907 Latrobe Building, Charles and Read Streets, Baltimore 2	1962

Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

A regular meeting of the Board is held the last Friday in each month, except during the months of July and August.

OFFICERS OF THE ADMINISTRATION

WILSON H. ELKINS, President, University of Maryland.

B.A., University of Texas, 1932; M.A., 1932; B.Litt., Oxford University, 1936; D.Phil., 1936.

ALBIN O. KUHN, Assistant to the President of the University.

B.S., University of Maryland, 1938; M.S., 1939; Ph.D., 1948.

ALVIN E. CORMENY, Assistant to the President, in charge of Endowment and Development.

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

HARRY C. BYRD, President Emeritus, University of Maryland.

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.Sc., Western Maryland College, 1938.

HAROLD F. COTTERMAN, Dean of the Faculty of the University.

B.S., Ohio State University, 1916; M.A. Columbia University, 1917; Ph.D., American University, 1930.

RONALD BAMFORD, Dean of the Graduate School.

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; Ph.D., Columbia University, 1931.

GORDON M. CAIRNS, Dean of Agriculture.

B.S., Cornell University, 1936; M.S., 1938; Ph.D., 1940.

PAUL E. NYSTROM, Director, Agricultural Extension Service.

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

IRVIN C. HAUT, Director, Agricultural Experiment Station and Head, Department of Horticulture.

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.

LEON P. SMITH, Dean of the College of Arts and Sciences.

B.A., Emory University, 1919; M.A., University of Chicago, 1928; Ph.D., 1930; Diplome de l'Institut de Touraine, 1932.

J. FREEMAN PYLE, Dean of the College of Business and Public Administration.

Ph.B., University of Chicago, 1917; M.A., 1918; Ph.D., 1925.

MYRON S. AISENBERG, Dean of the School of Dentistry.

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, Dean of the College of Education.

B.S., University of Minnesota, 1930; M.A., 1936; Ph.D., University of Colorado, 1942.

***S. SIDNEY STEINBERG**, Dean of the College of Engineering.

B.E., Cooper Union School of Engineering, 1910; C.E., 1913; Registered Professional Engineer.

WILBERT J. HUFF, Director, Engineering Experiment Station and Chairman of the Division of Physical Sciences.

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; Ph.D., Yale University, 1917; D.Sc. (hon.), Ohio Northern University, 1927.

M. MARIE MOUNT, Dean of the College of Home Economics.

B.A., University of Indiana, 1916; M.A., Columbia Teachers College, 1924.

ROGER HOWELL, Dean of the School of Law.

B.A., Johns Hopkins University, 1914; Ph.D., 1917; LL.B., University of Maryland, 1917.

WILLIAM S. STONE, Dean of the School of Medicine and Director of Medical Education and Research.

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; Ph.D., (hon.), University of Louisville, 1946.

FLORENCE M. GIPE, Dean of the School of Nursing.

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; Ed.D., University of Maryland, 1952.

CLIFFORD G. BLITCH, Director of the University Hospital.

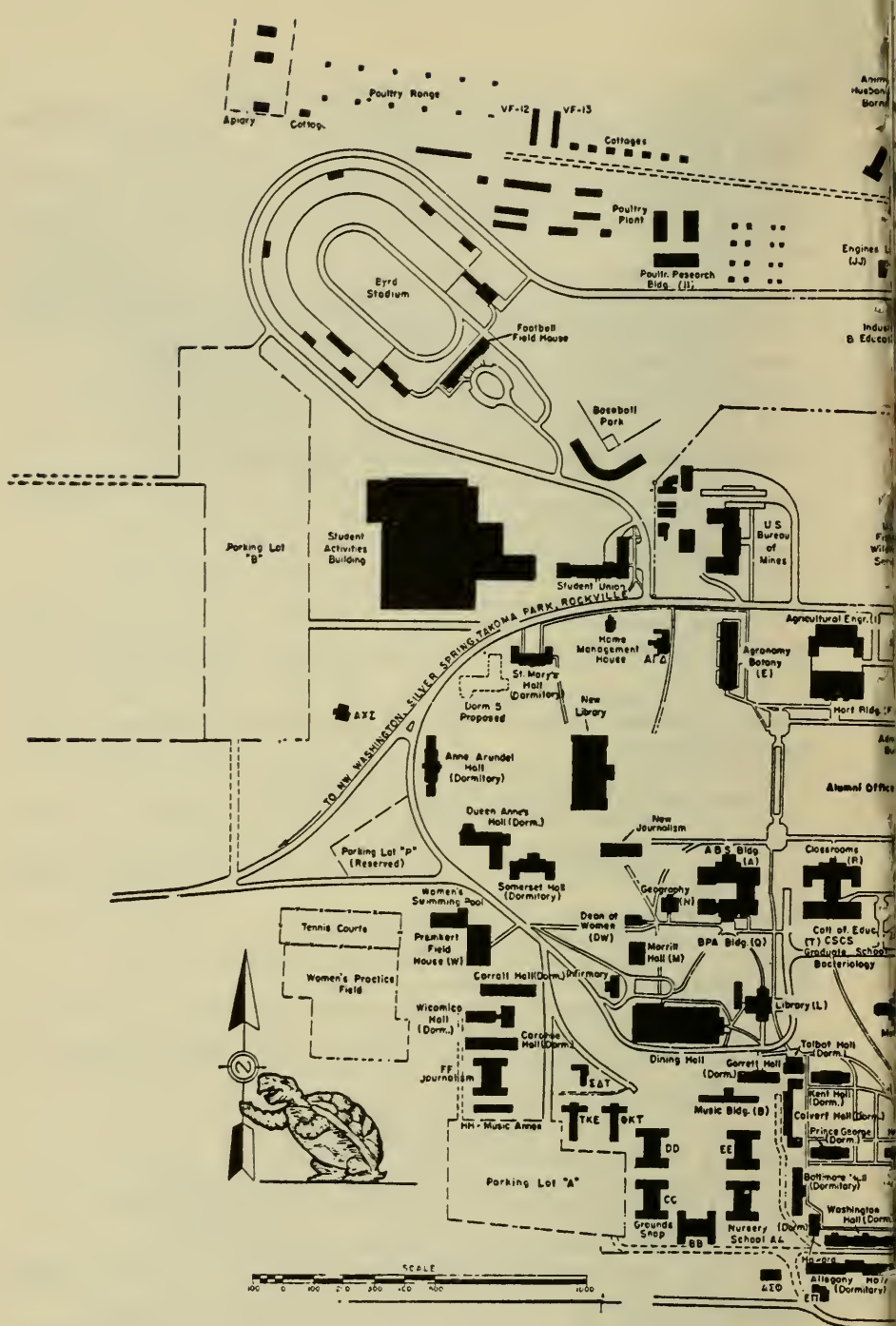
M.D., Vanderbilt University Medical School, 1928.

*Resigned January 31, 1957.

- EDWARD BARBER**, Dean of the College of Military Science.
B.S., Massachusetts Institute of Technology, 1935; M.A., Georgetown University, 1956; Brigadier General, U.S. Air Force.
- NOEL E. FOSS**, Dean of the School of Pharmacy.
Ph.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; Ph.D., 1933.
- LESTER M. FRALEY**, Dean of the College of Physical Education, Recreation, and Health.
B.A., Randolph-Macon College, 1928; M.A., 1937; Ph.D., Peabody College, 1939.
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B.A., Wabash College, 1929; M.A., Butler University, 1930; Ph.D., Syracuse University, 1937.
- GEARY F. EPLEY**, Director of Student Welfare and Dean of Men.
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- ADELE H. STAMP**, Dean of Women.
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.
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B.A., University of Maryland, 1930; M.S., 1931.
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B.A., University of Chicago, 1940.
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B.A., University of Maryland, 1938.
- WILLIAM W. COBEY**, Director of Athletics.
A.B., University of Maryland, 1930.
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B.S., University of Maryland, 1933.
- GEORGE W. MORRISON**, Associate Director and Supervising Engineer, Physical Plant. (Baltimore).
B.S., University of Maryland, 1927; E.E., 1931.
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B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.
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B.A., University of Maryland, 1926; M.A., 1928.
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B.A., University of Massachusetts, 1941.
- HARRY A. BISHOP**, Director of the Student Health Service.
M.D., University of Maryland, 1912.
- ROBERT E. KENDIG**, Professor of Air Science and Commandant of Cadets, Air Force R.O.T.C.
A.B., William and Mary College, 1939.

DIVISION CHAIRMEN

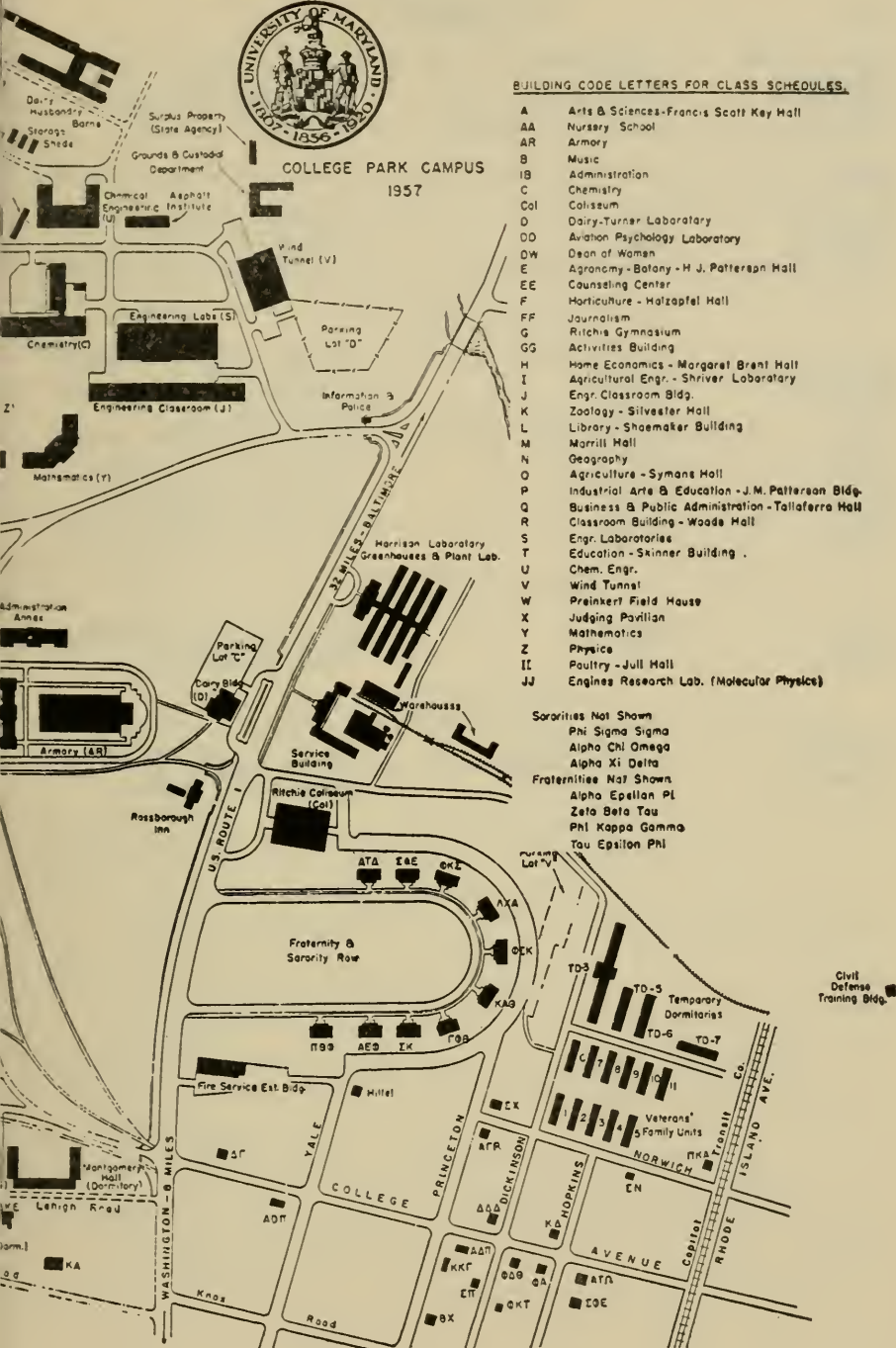
- CHARLES E. WHITE**, Chairman of the Lower Division.
B.S., University of Maryland, 1923; M.S., 1924; Ph.D., 1926.
- JOHN E. FABER, JR.**, Chairman of the Division of Biological Sciences.
B.S., University of Maryland, 1926; M.S., 1927; Ph.D., 1937.
- ADOLF E. ZUCKER**, Chairman of the Division of Humanities.
B.A., University of Illinois, 1912; M.A., 1913; Ph.D., University of Pennsylvania, 1917.
- HAROLD C. HOF SOMMER**, Chairman of the Division of Social Sciences.
B.S., Northwestern University, 1921; M.A., 1923; Ph.D., Cornell University, 1929.
- WILBERT J. HUFF**, Chairman of the Division of Physical Sciences.
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; Ph.D., Yale University, 1917; D.Sc. (hon.), Ohio Northern University, 1927.



UNIVERSITY OF MARYLAND



COLLEGE PARK CAMPUS 1957



BUILDING CODE LETTERS FOR CLASS SCHEDULES

A	Arts & Sciences - Francis Scott Key Hall
AA	Nursery School
AR	Armory
B	Music
IB	Administration
C	Chemistry
Col	Coliseum
D	Dairy-Turner Laboratory
DD	Aviation Psychology Laboratory
OW	Dean of Women
E	Agronomy - Botany - H. J. Patterson Hall
EE	Counseling Center
F	Horticulture - Halzappel Hall
FF	Journalism
G	Ritchie Gymnasium
GG	Activities Building
H	Home Economics - Margaret Brent Hall
I	Agricultural Engr. - Shriver Laboratory
J	Engr. Classroom Bldg.
K	Zoology - Silvester Hall
L	Library - Shoemaker Building
M	Morrill Hall
N	Geography
O	Agriculture - Symans Hall
P	Industrial Arts & Education - J.M. Patterson Bldg.
Q	Business & Public Administration - Tallaferra Hall
R	Classroom Building - Woods Hall
S	Engr. Laboratories
T	Education - Skinner Building
U	Chem. Engr.
V	Wind Tunnel
W	Preinkert Field House
X	Judging Pavilion
Y	Mathematics
Z	Physics
II	Poultry - Jull Hall
JJ	Engines Research Lab. (Molecular Physics)

Sororities Not Shown

Phi Sigma Sigma
Alpha Chi Omega
Alpha Xi Delta

Fraternities Not Shown

Alpha Epsilon Pi
Zeta Beta Tau
Phi Kappa Gamma
Tau Epsilon Phi

Civil Defense
Training Bldg.

1957-58 CALENDAR

First Semester

1957

September 17-20	Tuesday-Friday	Registration, first semester
September 23	Monday	Instruction begins
November 27	Wednesday after last class	Thanksgiving recess begins
December 2	Monday, 8 A.M.	Thanksgiving recess ends
December 21	Saturday after last class	Christmas recess begins

1958

January 6	Monday, 8 A.M.	Christmas recess ends
January 20	Monday	Charter Day
January 21	Tuesday	Pre-Examination Study Day
January 22-29	Wednesday-Wednesday, inc.	First Semester examinations

Second Semester

February 4-7	Tuesday-Friday	Registration, second semester
February 10	Monday	Instruction begins
February 22	Saturday	Washington's birthday, holiday
March 25	Tuesday	Maryland Day
April 3	Thursday after last class	Easter recess begins
April 8	Tuesday, 8 A.M.	Easter recess ends
May 15	Thursday	Military Day
May 28	Wednesday	Pre-Examination Study Day
May 29-June 6	Thursday-Friday, inc.	Second Semester examinations
May 30	Friday	Memorial Day, holiday
June 1	Sunday	Baccalaureate exercises
June 7	Saturday	Commencement exercises

Summer Session, 1958

June 23	Monday	Registration, Summer Session
June 24	Tuesday	Summer Session begins
August 1	Friday	Summer Session ends

Short Courses

June 16-21	Monday-Saturday	Rural Women's Short Course
August 4-9	Monday-Saturday	4-H Club Week
September 2-5	Tuesday-Friday	Firemen's Short Course

College of E D U C A T I O N

STAFF

GRACE L. ADAMS, Assistant Professor of Education, Institute for Child Study.
B.S., University of Southern California, 1940; M.S., University of Southern California, 1956.

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B.S., University of Minnesota, 1930; M.A., University of Minnesota, 1936; Ph.D., University of Colorado, 1942.

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GLEN D. BROWN, Professor of Industrial Education.
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LILLIAN W. BROWN, Instructor in Childhood Education.
B.A., Lake Erie College, 1930.

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B.A., Goucher College, 1923; M.A., University of Maryland, 1945.

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B.A., Franklin and Marshall College, 1938; M.A., Columbia University, 1947; Ed.D., Columbia University, 1952.

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B.S., Ohio State University, 1916; M.A., Columbia University, 1917; Ph.D., American University, 1930.

FRANCES H. DAYWALT, Graduate Assistant, Institute for Child Study.
B.Ed., University of California, 1939; M.A., University of California, 1955.

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B.A., Columbia University, 1938; M.A., University of Maryland, 1942.

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B.A., University of Chicago, 1943; M.A., University of Chicago, 1948; Ed.M., 1950, Ed.D., 1956, University of Illinois.

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B.S., Columbia University, 1917; M.A., Columbia University, 1927.

JACOB D. GOERING, Fellow, Institute for Child Study.

B.A., Bethel College, 1941; B.D., Bethany Seminary, 1949.

WILLIAM HAMMERMAN, Fellow, Institute for Child Study.

B.S., Towson State Teachers College, 1952; M.A., University of Maryland, 1953.

R. LEE HORNBAKE, Professor and Head, Industrial Education.

B.S., State Teachers College, California, Pennsylvania, 1934; M.A., Ohio State University, 1936; Ph.D., Ohio State University, 1942.

KENNETH O. HOVET, Professor of Education.

B.A., St. Olaf College, 1926; Ph.D., University of Minnesota, 1950.

BRUCE E. JOHNSON, Graduate Assistant, Institute for Child Study.

B.A., University of Southern California, 1953; M.Ed., University of Maryland, 1956.

MARY F. KEMBLE, Instructor in Music and Music Education.

B.S., State Teachers College, Mansfield, Pennsylvania, 1930; M.S., University of Pennsylvania, 1940.

JOHN J. KURTZ, Professor of Education, Institute for Child Study.

B.A., University of Wisconsin, 1935; M.A., Northwestern University, 1940; Ph.D., University of Chicago, 1947.

ROCCO E. LORUSSO, Graduate Assistant, Institute for Child Study.

B.S., New Jersey State Teachers College, 1942; M.A., Teachers College, Columbia University, 1948.

DONALD MALEY, Professor of Industrial Education.

B.S., State Teachers College, California, Pennsylvania, 1943; M.A., University of Maryland, 1947; Ph.D., University of Maryland, 1950.

LOIS A. MAST, Instructor in Childhood Education.

B.S., University of Maryland, 1952.

WESLEY J. MATSON, Assistant Professor of Education.

B.S., University of Minnesota, 1948; M.A., University of California, 1954.

RICHARD L. MATTESON, Fellow, Institute for Child Study.

B.A., Knox College, Galesburg, Illinois, 1952.

J. ALFRED MCCAUSLIN, Fellow, College of Education.

B.A., Rollins College, 1951; M.A., Pennsylvania State University, 1952; M.S., Pennsylvania State University, 1954.

GEORGE R. MERRILL, Instructor in Industrial Education.

B.S., University of Maryland, 1954; M.Ed., University of Maryland, 1955.

MADELAINE J. MERSHON, Professor of Education, Institute for Child Study.

B.S., Drake University, 1950; M.A., University of Chicago, 1943; Ph.D., University of Chicago, 1950.

DOROTHY R. MOHR, Professor of Physical Education.

B.S., University of Chicago, 1932; M.A., University of Chicago, 1933; Ph.D., University of Iowa, 1944.

H. GERTHON MORGAN, Professor of Education, Institute for Child Study.

B.A., Furman University, 1940; M.A., University of Chicago, 1943; Ph.D., University of Chicago, 1946.

CLARENCE A. NEWELL, Professor of Educational Administration.

B.A., Hastings College, Nebraska, 1935; M.A., Columbia University, 1939; Ph.D., Columbia University, 1943.

LEO W. O'NEILL, Associate Professor of Education.

B.A., University of Chicago, 1938; M.A., University of Kansas City, 1953; Ed.D., University of Colorado, 1955.

LAKE C. OXFORD, Graduate Assistant, Institute for Child Study.

B.S., Louisiana Polytechnic Institute, 1949; M.Ed., Southern Methodist University, 1952.

ELWOOD A. PADHAM, Instructor in Industrial Education.

B.S., Gorham State Teachers College, 1953.

ARTHUR S. PATRICK, Associate Professor of Business Education.

B.E., State Teachers College, Whitewater, Wisconsin, 1931; M.A., University of Iowa, 1940; Ph.D., American University, 1956.

BERNARD PECK, Instructor in Education, Institute for Child Study.

B.A., Indiana University, 1939; M.A., Columbia University, 1941.

HUGH V. PERKINS, Professor of Education, Institute for Child Study.

B.A., Oberlin College, 1941; M.A., University of Chicago, 1946; Ph.D., University of Chicago, 1949; Ed.D., New York University, 1956.

DANIEL A. PRESCOTT, Professor of Education and Director, Institute for Child Study.

B.S., Tufts College, 1920; M.Ed., Harvard University, 1922; Ed.D., Harvard University, 1923.

ROBERT G. RISINGER, Associate Professor of Education.

B.S., Ball State Teachers College, 1940; M.A., University of Chicago, 1947; Ed.D., University of Colorado, 1955.

ALVIN W. SCHINDLER, Professor of Education.

B.A., Iowa State College, 1927; M.A., University of Iowa, 1929; Ph.D., University of Iowa, 1934.

FERN D. SCHNEIDER, Associate Professor of Education.

B.S., Nebraska Wesleyan University, 1932; M.A., George Washington University, 1934; Ed.D., Columbia University, 1940.

JENNYE F. SCHULTZ, Graduate Assistant, College of Education.

B.A., Mississippi College, 1951; M.Ed., University of Alabama, 1954.

MABEL S. SPENCER, Assistant Professor of Home Economics Education.

B.S., West Virginia University, 1925; M.S., West Virginia University, 1946.

DONALD STANGER, Assistant Professor of Education, Institute for Child Study.

B.S., State Teachers College, Glassboro, New Jersey, 1948; M.A., Columbia University, 1949; Ed.D., University of Maryland, 1955.

MARGARET A. STANT, Assistant Professor of Childhood Education.

B.S., University of Maryland, 1952; M.Ed., University of Maryland, 1955.

JOANNE W. TAYLOR, Instructor in Childhood Education.

B.S., University of Maryland, 1954.

FRED R. THOMPSON, Associate Professor of Education, Institute for Child Study.

B.A., University of Texas, 1929; M.A., University of Texas, 1939; Ed.D., University of Maryland, 1952.

WILLIAM F. TIERNEY, Assistant Professor of Industrial Education.

B.S., Teachers College of Connecticut, 1941; M.A., Ohio State University, 1949;
Ed.D., University of Maryland, 1952.

ORVAL L. ULRY, Associate Professor of Education.

B.S., Ohio State University, 1938; M.A., Ohio State University, 1944; Ph.D., Ohio
State University, 1953.

JAMES A. VAN ZWOLL, Professor of School Administration.

B.A., Calvin College, Grand Rapids, Michigan, 1933; M.A., University of Michigan,
1937; Ph.D., University of Michigan, 1942.

WALTER B. WAETJEN, Associate Professor of Education, Institute for Child
Study.

B.S., State Teachers College, Millersville, Pennsylvania, 1942; M.S., University of
Pennsylvania, 1947; Ed.D., University of Maryland, 1951.

KENNETH C. WEISBROD, Graduate Assistant, Institute for Child Study.

B.A., University of Redlands, 1942; M.A., Stanford University, 1949.

GLADYS A. WIGGIN, Professor of Education.

B.S., University of Minnesota, 1929; M.A., University of Minnesota, 1939; Ph.D.,
University of Maryland, 1947.

ALBERT W. WOODS, Associate Professor of Physical Education.

B.S., University of Maryland, 1933; M.Ed., University of Maryland, 1949.

LOUISE YUILL, Instructor in Childhood Education.

B.S., Teachers College, Columbia University, 1945; M.A., Teachers College, Columbia
University, 1946.

SUPERVISING TEACHERS

Second Semester, 1955-56 and First Semester, 1956-57

PAULINE E. ABEYOUNIS, Richard Montgomery Senior- Junior High School,
Montgomery County.

MAE ALDER, Lewisdale Elementary School, Prince George's County.

DOROTHY ANDREWS, Laytensville Elementary School, Montgomery County.

EDNA ARNN, Suitland Junior High School, Prince George's County.

WILLIAM G. BAGNALL, Montgomery Blair Senior High School, Montgomery
County.

THOMAS BATSON, Bladensburg Junior High School, Prince George's County.

CECILE BARNES, College Park Kindergarten, Prince George's County.

RUTH H. BAVER, Northwestern Senior High School, Prince George's County.

ESSIE C. BECK, Montgomery Hills Junior High School, Montgomery County.

RENA BECKER, Montgomery County Jewish Community School, Montgomery
County.

ALICE BEHLMER, Towson Senior High School, Baltimore County.

ALBERT BENDER, Bethesda-Chevy Chase Senior High School, Montgomery
County.

SUZANNE BENNETT, Thomas Stone Elementary School, Prince George's County.

MARIE BIEGUN, William Paca Elementary School, Baltimore City.

MASSEY BLACK, Bethesda-Chevy Chase Senior High School, Montgomery
County.

GILBERT BLUMBERG, Forest Park High School, Baltimore City.
SAMUEL M. BOHINCE, Takoma Park Junior High School, Montgomery County.
EDYTHE BOLTON, University Park Elementary School, Prince George's County.
BETTY L. BONNET, Sherwood Senior-Junior High School, Montgomery County.
WALTER BOROWETZ, Greenbelt Junior High School, Prince George's County.
CLARA BRICKER, Northwestern Senior High School, Prince George's County.
LILLIAN BROWN, Richard Montgomery Senior-Junior High School, Montgomery County.
BETTY BRUNSTEIN, Northwestern Senior High School, Prince George's County.
JULIA SOTHORAN BUDDINGTON, Berwyn Elementary School, Prince George's County.
ELIZABETH M. BURLEY, Suitland Senior High School, Prince George's County.
ROBERT E. CALLAHAN, Bladensburg Senior-Junior High School, Prince George's County.
ANNA CELLA, Fallstaff Road School, Baltimore City.
LOUIS G. CHACOS, Wheaton Senior High School, Montgomery County.
RUTH CHANEY, Beltsville Elementary School, Prince George's County.
JOHANNA CODA, Bladensburg Primary School, Prince George's County.
LUCILLE COGGIANO, North Point Junior High School, Baltimore County.
DORIS N. COMBY, Surrattsville Senior-Junior High School, Prince George's County.
CATHERINE CONAFAY, Wakefield High School, Arlington County, Virginia.
HELEN COOK, Montgomery Blair Senior High School, Montgomery County.
MARY COUNCELL, Washington and Lee High School, Arlington County, Virginia.
JEWELL M. CREIGHTON, Woodside Elementary School, Montgomery County.
BEATRICE CROCKER, Kensington Junior High School, Montgomery County.
NANCY CUBBAGE, Northwestern Senior High School, Prince George's County.
NANCY LOU DAVIS, Maryland Park Junior High School, Prince George's County.
RUTH ANN DAVIS, Glenmont Elementary School, Montgomery County.
WALTER DEDOVITCH, Bladensburg Senior-Junior High School, Prince George's County.
MARY DELANEY, Margaret Brent School, Baltimore City.
LENORE DICKMAN, Louisa M. Alcott School, Baltimore City.
ANGELO W. DONDERO, Hyattsville Junior High School, Prince George's County.
LOUISE DOTY, Frederick Senior High School, Frederick County.
MARY TERESA DOUGHERTY, George Fox Junior High School, Anne Arundel County.
BETTY DOWNING, College Park Elementary School, Prince George's County.
WILLIAM ALFRED DRAPER, Wheaton Senior High School, Montgomery County.
JEAN DURBIN, Bladensburg Senior-Junior High School, Prince George's County.
HOPE W. EAGLE, Silver Spring Nursery School, Inc., Montgomery County.
DOROTHY R. EHLERS, Bladensburg Senior-Junior High School, Prince George's County.
BARBARA R. EHRLICH, Orthopedic Unit, Silver Spring Intermediate School, Montgomery County.
C. J. FLAESCH, Surrattsville High School, Prince George's County.
ANN A. FLORENCE, Whittier Elementary School, Washington, D. C.

CHARLES F. FORST, Northwestern Senior High School, Prince George's County.
ELIZABETH D. FORTIN, Western Junior High School, Washington, D. C.
JOHN EDGAR FRANK, Hyattsville Junior High School, Prince George's County.
WALDEN KENNETH FRISBIE, Bethesda-Chevy Chase Senior High School, Montgomery County.
GAIL A. FURNAS, Takoma Park Nursery School, Montgomery County.
PHYLISS K. FRYE, Carole Highlands Elementary School, Montgomery County.
CHARLES T. FUTRELL, Laurel Senior-Junior High School, Prince George's County.
JEANETTE GALAMBOS, Takoma Park Cooperative Nursery School, Montgomery County.
LULA D. GARRETT, Taft Junior High School, Washington, D. C.
JANICE GARROTT, Guilford Elementary School, Baltimore City.
STANLEY E. GAUB, Takoma Park Junior High School, Montgomery County.
SALLY B. GEOGHEGAN, High Point Senior High School, Prince George's County.
GEORGE P. GEORGE, Bladensburg Senior-Junior High School, Prince George's County.
DALE E. GERSTER, Bladensburg Senior High School, Prince George's County.
SARAH GLASS, Thomas Jefferson Elementary School, Baltimore City.
HERBERT H. GORIN, Wheaton High School, Montgomery County.
ELEANOR H. GOSSETT, Stanton Elementary School, Washington, D. C.
LELLA A. GRAEFF, Ager Road Elementary School, Prince George's County.
HELEN GRAHAM, Community Cooperative Nursery School, Montgomery County.
KATHERINE GRIIMES, Bladensburg Junior High School, Prince George's County.
RACHEL E. GREEN, Francis Scott Key Junior High School, Baltimore City.
SARA GREEN, East Silver Spring Elementary School, Montgomery County.
JOHN G. GRUBER, Suitland Senior-Junior High School, Prince George's County.
MARJORIE HACKETT, Hyattsville Junior High School, Prince George's County.
HELENA J. HAINES, Northwestern Senior High School, Prince George's County.
BARBARA H. HALL, Silver Spring Nursery School, Inc., Montgomery County.
REBECCA L. HAMILTON, Northwestern Senior High School, Prince George's County.
MILDRED HANEY, Kenwood Junior High School, Baltimore County.
LOIS HARDING, Northwestern Senior High School, Prince George's County.
BARBARA C. HARKINS, George Fox Junior High School, Anne Arundel County.
STELLA HARRINGTON, Roland Park Junior High School, Baltimore City.
ELEANOR HARRIS, Hyattsville Junior High School, Prince George's County.
MYRNA LEE HELTSLEY, Eastern Suburban Junior High School, Montgomery County.
EILEEN HENZE, Pimlico Junior High School, Baltimore City.
MARY JANET HIHN, William Paca Elementary School, Baltimore City.
CAROLYN HIMES, Western Junior High School, Washington, D. C.
PAULINE HOLCOMB, Wheaton Senior-Junior High School, Montgomery County.
RUTH HOLSTEIN, Garden Nursery School, Inc., Montgomery County.
BEATRICE HOPPER, Liberty Elementary School, Baltimore City.
HELEN A. HORNER, Westminster High School, Carroll County.
CLARA LEE HYATT, Bethesda-Chevy Chase Senior High School, Montgomery County.

LUCILLE A. IRWIN, Glenside Cooperative Kindergarten, Montgomery County.
EVELYN JOSEPHSON, Arlington Elementary School, Baltimore City.
EDWARD C. JUSTICE, Northwestern Senior High School, Prince George's County.
MARIANNA KEENE, Hyattsville Junior High School, Prince George's County.
DEVONA KEITHLEY, Northwestern Senior High School, Prince George's County.
GEORGE ANNE KEMERER, Hyattsville Junior High School, Prince George's County.
MAUREEN KEMPFFER, Glenbrook Nursery School, Inc., Montgomery County.
DORA KENNEDY, College Park Elementary School, Prince George's County.
ERIKA KESSEL, University Park Elementary School, Prince George's County.
ELNORA L. KIDD, Stanton Elementary School, Washington, D. C.
CHARLES R. KILBOURNE, Suitland Senior High School, Prince George's County.
PRISCILLA KLINE, Montgomery Blair Senior High School, Montgomery County.
ELAYNE KLUGMAN, Arlington Elementary School, Baltimore City.
KATHERINE KRIEMELMEYER, Takoma Park Cooperative Nursery School, Montgomery County.
GLADYS KUBSKI, Liberty Elementary School, Baltimore City.
VALTA C. LAWLER, Hyattsville Junior High School, Prince George's County.
HILDA LAYDEN, Landover Hills Elementary School, Prince George's County.
ADALYN LEHARDY, Parkside Elementary School, Montgomery County.
DOROTHY R. LEUEY, Franklin D. Roosevelt School, Baltimore City.
ALFRED W. LITTLE, Hyattsville Junior High School, Prince George's County.
LILLIAN LUKE, Woodbourne Junior High School, Baltimore City.
MARY LYNN, Mt. Rainier Junior High School, Prince George's County.
BABETTE G. MACPHERSON, Rolling Terrace Elementary School, Montgomery County.
ALLAN MAINEN, Patterson Park Senior-Junior High School, Baltimore City.
JOHN E. MALEY, Richard Montgomery High School, Montgomery County.
HORACE M. MANN, Northwestern Senior High School, Prince George's County.
VICTOR J. MARIETTA, Mt. Rainier Junior High School, Prince George's County.
IONEENE C. MCAULEY, Wheaton Senior High School, Montgomery County.
WILLIAM McDONALD, Bladensburg Senior High School, Prince George's County.
JOSEPH J. MCFADDEN, Bladensburg Senior-Junior High School, Prince George's County.
MARY MCNEIL, Garden Nursery School, Inc., Montgomery County.
INEZ MEHRENS, Parkside Elementary School, Montgomery County.
JOSEPH A. MILLER, Sparrows Point Senior-Junior High School, Baltimore County.
BERNICE MOELLER, Chevy Chase Elementary School, Montgomery County.
ROSALIE L. MOODY, Clifton Park Junior High School, Baltimore City.
MARIAN MOORE, Parkside Elementary School, Montgomery County.
ELMER G. MUTH, Wheaton Senior High School, Montgomery County.
JOSEPH MUELLER, Patterson Park Senior-Junior High School, Baltimore City.
SALLY LOU JARVIS NOREM, Hollywood Elementary School, Prince George's County.
JAMES E. PERRY, JR., Hyattsville Junior High School, Prince George's County.
MARY PFILL, Thomas Jefferson Elementary School, Baltimore City.
EDWARD PHILLIPS, Northwestern Senior High School, Prince George's County.

LOUISE M. POOLE, Rolling Terrace Elementary School, Montgomery County.
ALINE PORTER, College Park Elementary School, Prince George's County.
SELMA POSNER, Silver Spring Intermediate School, Montgomery County.
JENNIE PURDY, Cheverly Elementary School, Prince George's County.
ANNE PUTNAM, Northwestern Senior High School, Prince George's County.
RONALD REEDER, Suitland Senior High School, Prince George's County.
KATHLEEN REHANEK, Northwestern Senior High School, Prince George's County.
CHARLES B. REMALEY, Sherwood Senior-Junior High School, Montgomery County.
MARY REYNOLDS, Woodbourne Junior High School, Baltimore City.
ERNEST V. RHODES, Montgomery Blair Senior High School, Montgomery County.
BETTY A. RICH, Mt. Rainier Elementary School, Prince George's County.
EDWARD P. RIEDER, Montgomery Blair Senior High School, Montgomery County.
BETTY JANE ROBIC, Richard Montgomery Senior-Junior High School, Montgomery County.
MARY ROGERS, Berwyn Elementary School, Prince George's County.
MICHAEL R. RONCA, Northwestern Senior High School, Prince George's County.
ANN ROUNDTREE, Fallstaff Road Elementary School, Baltimore City.
JAMES P. ROULEAZ, Eastern Suburban Junior High School, Montgomery County.
ROGENE RUSSELL, Lewisdale Elementary School, Prince George's County.
ALFRED A. SADUSKY, Bethesda- Chevy Chase Senior High School, Montgomery County.
ELIZABETH SAUNDERS, District Heights Elementary School, Washington, D. C.
MILDRED SCHOCH, Bradley Elementary School, Montgomery County.
JOHN R. SCOTT, High Point Senior High School, Prince George's County.
EVELYN E. SHANK, Hyattsville Junior High School, Prince George's County.
JANE B. SHAPIRO, Towson Senior High School, Baltimore County.
SARA M. SHEGOGUE, Bladensburg Senior High School, Prince George's County.
JEAN L. SHELLEY, Milford Mill Senior-Junior High School, Baltimore County.
INA W. SHIELDS, Lewisdale Elementary School, Prince George's County.
FLORENCE SIMONDS, Parkway Elementary School, Prince George's County.
HOWARD J. SKIDMORE, Hughesville Junior High School, Charles County.
WARREN G. SMELTZER, Northwestern Senior High School, Prince George's County.
DOROTHY H. SMITH, Clifton Park Junior High School, Baltimore City.
ELIZABETH B. SMITHER, Montgomery Hills Junior High School, Montgomery County.
ANN SMITHERS, Hyattsville Elementary School, Prince George's County.
EUGENE A. STEINBACH, Mt. Vernon High School, Fairfax County, Virginia.
DAVID E. STOWE, Stuart Junior High School, Washington, D. C.
MABEL S. STURM, Paul Junior High School, Washington, D. C.
LOIS TEETER, Thomas Stone School, Prince George's County.
MARY TONER, Westbrook Elementary School, Washington, D. C.
FRANCIS TRACY, Glenridge Junior High School, Prince George's County.

FLORENCE UDEL, Montebello Elementary School, Baltimore City.

FLORENCE VAN METER, Whitmore Nursery School and Kindergarten, Baltimore City.

ESTHER VOGEL, Suitland Senior High School, Prince George's County.

ALEXIS VON BRETZEL, Bethesda-Chevy Chase Senior High School, Montgomery County.

MARY WALDROP, Community Cooperative Nursery School, Montgomery County.

SARAH H. WATSON, Mt. Rainier Elementary School, Prince George's County.

MILDRED A. WHITESIDE, Westminster High School, Carroll County.

FERN WILL, Richard Montgomery High School, Montgomery County.

ANN M. WILLARD, Montgomery Hills Junior High School, Montgomery County.

JACK WILLARD, High Point Senior High School, Prince George's County.

LOUISE G. WINFIELD, Bethesda-Chevy Chase Senior High School, Montgomery County.

HUGH R. WOOD, JR., Mt. Rainier Junior High School, Prince George's County.

WILLIAM D. YARNALL, Northwestern Senior High School, Prince George's County.

HARRY ZEMEL, Liberty Elementary School, Baltimore City.

JOHN M. ZINN, High Point Senior High School, Prince George's County.

COLLEGE OF EDUCATION

VERNON E. ANDERSON, Ph.D., *Dean*GEORGE W. DENEMARK, Ed.D., *Assistant Dean*

THE College of Education meets the needs of the following classes of students: (1) persons preparing to teach in secondary schools, elementary schools, kindergartens, and nursery schools; (2) present or prospective elementary teachers who wish to supplement their preparation; (3) students preparing for educational work in the trades and industries; (4) graduate students preparing for teaching, supervisory, or administrative positions; (5) students whose major interests are in other fields, but who desire courses in education.

SPECIAL FACILITIES AND ACTIVITIES

Research and Teaching Facilities

Because of the location of the University in the suburbs of the nation's capital, unusual facilities for the study of education are available to its students and faculty. The Library of Congress, the library of the U. S. Office of Education, and special libraries of other government agencies are accessible, as well as the information services of the National Education Association, American Council on Education, U. S. Office of Education, and other institutions, public and private. The school systems of the District of Columbia, Baltimore, and the counties of Maryland offer generous cooperation.

The Institute for Child Study

The Institute for Child Study carries on the following activities: (1) it undertakes basic research in human development; (2) it digests and synthesizes research findings from the many sciences that study human beings; (3) it plans, organizes, and provides consultant service programs of direct child study by in-service teachers in individual schools or in municipal, county or state systems; (4) it offers field training to a limited number of properly qualified doctoral students, preparing them to render expert consultant service to schools and for college teaching of human development. Inquiries should be addressed to Director, Institute for Child Study.

The Workshop on Child Development and Education

The College of Education operates a Workshop on Child Development and Education for six weeks each summer. Requiring full-time work of all participants it provides opportunities for (1) study and synthesis of scientific knowledge about children and youth; (2) training in the analysis of case records; (3) training for study-group leaders for in-service child study programs; (4) planning in-service programs of child study for teachers and pre-service courses and laboratory experiences for prospective teachers; (5) analysis of the curricular, guidance, and school organization implications of scientific knowledge about human development and behavior. Special announce-

ments of the workshop are available about March 15 of each year and advance registration is required because the number of participants must be limited. Inquiries should be addressed to the Director, Workshop on Child Development and Education.

Industrial Education Department

The Industrial Education Department is housed in a new building known as the J. Milton Patterson Building. The facilities of this building are devoted exclusively to the work of the Department. There are ten shops, a drafting room, library, conference room and two classrooms. All of the shops are adequately equipped with modern tools and machines.

The University of Maryland Nursery-Kindergarten School

The University of Maryland operates a nursery-kindergarten school on the campus in which students majoring in childhood education receive training and practical experience.

Professional and Pre-professional Organizations

The College of Education sponsors two professional organizations: Phi Delta Kappa, the national professional fraternity for men in Education, and Iota Lambda Sigma, the national honorary fraternity in Industrial Education. Both fraternities have large and active chapters and are providing outstanding professional leadership in their fields of service.

The College of Education also sponsors a Chapter of the Future Teachers of America, a department of the National Education Association. This chapter is open to undergraduate students on the College Park campus.

Courses Outside of College Park

Through the College of Special and Continuation Studies, a number of courses in education are offered in Baltimore and elsewhere. These courses are chosen to meet the needs of groups of students in various centers. In these centers, on a part-time basis, a student may complete a part of the work required for an undergraduate or graduate degree.

Announcements of such courses may be obtained by addressing requests to the Dean, College of Special and Continuation Studies, College Park, Md.

UNDERGRADUATE PROGRAMS

Requirements for Admission

All students desiring to enroll in the College of Education must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students more emphasis will be placed upon good marks and other indications of probable success in college rather than upon a fixed pattern of subject matter. Four (4) units of English and 1 unit each of Social and

Natural Sciences and Mathematics are required. One unit of Plane Geometry, two units of Natural Sciences, and two units of Social Sciences are desirable for a program that permits the greatest amount of flexibility in meeting the requirements of various College of Education curricula. While Foreign Language is desirable for certain programs, no Foreign Language is required for entrance. Fine Arts, Trade and Vocational subjects are acceptable as electives.

Students are referred to the "General Information Catalog" for a complete statement of requirements for admission to the different curricula in the College of Education.

Candidates for admission whose high school or college records are consistently low are strongly advised not to seek admission to the College of Education.

General Information

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, societies and special clubs, the University band, student publications, University Post Office and Supply Store, write to the Editor of Publications for the Catalog of General Information.

Military Instruction

All male students, unless specifically exempted under University rules, are required to take basic Air Force R. O. T. C. training for a period of two years. The successful completion of this course is a prerequisite for graduation but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of military training will be required to complete the course or take it until graduation, whichever ever occurs first.

Selected students who wish to do so may carry advanced Air Force R. O. T. C. courses during their junior and senior years which lead to a regular or reserve commission in the United States Air Force.

For further details concerning the requirements in Military Instruction, write the Editor of Publications for the Catalog of General Information.

Physical Education and Health

All undergraduate students classified academically as freshmen and sophomores, irrespective of their physical condition, who are registered for more than six semester hours, are required to complete four prescribed courses in

physical education. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have credit in these courses or their equivalent, must complete them or take them until graduation, whichever occurs first. Students with military service may receive credit for these required courses by applying to the Dean of the College of Air Science.

Guidance in Registration

At the time of matriculation each student is tentatively assigned to a member of the faculty who acts as the student's personal adviser. The choice of subject areas within which the student will prepare to teach will be made under faculty guidance during the first year in the Orientation to Education course required of all freshmen. Thereafter, the student will advise regularly with the faculty member in the College of Education responsible for his teaching major. While it may be possible to make satisfactory adjustments as late as the junior year for students from other colleges who have not already entered upon the sequence of professional courses, it is highly desirable that the student begin his professional work in the freshman year. *Students who intend to teach* (except Vocational Agriculture) *should register in the College of Education*, in order that they may have the continuous counsel and guidance of the faculty directly responsible for their professional preparation.

Junior Status

The first two years of college work are preparatory to the professional work of the junior and senior years. To be eligible to enter the junior year professional courses, a student must have attained junior status. (See Academic regulations.)

Certification of Teachers

The State Department of Education certifies to teach in the approved high schools of the State only graduates of approved colleges who have satisfactorily fulfilled subject-matter and professional requirements. The several curricula of the College of Education fulfill State Department requirements for certification.

Students intending to qualify as teachers in Baltimore, Washington, or any other city or state should, in their junior year, obtain a statement of certification requirements from these areas and be guided thereby in the selection of courses. Advisers will assist in obtaining and utilizing such information.

Degrees

The degrees conferred upon students who have met the conditions prescribed for a degree in the College of Education are Bachelor of Arts and Bachelor of Science. Majors in English, social sciences, language, and art receive the B.A. degree. Mathematics majors may receive either degree. All others receive the B.S. degree.

Costs

Actual annual costs of attending the University include: \$165.00 fixed charges; \$75.00 special fees; \$400.00 board; \$140.00 to \$170.00 lodging for Maryland residents, or \$190.00 to \$220.00 for residents of other States and Countries; and laboratory fees, which vary with the laboratory courses pursued. A matriculation fee of \$10.00 is charged all new students. A charge of \$250.00 is assessed to all students who are non-residents of the State of Maryland.

For a more detailed statement of these costs, write to the Editor of Publications for the Catalog of General Information.

GRADUATE STUDIES

Graduate Status

For graduate study in education a student must have earned at least 16 semester credits in education at the undergraduate level, and hold a bachelor's or master's degree from a college or university of recognized standing. This requirement may be interpreted so that foundation work in fields other than education may be accepted in cases of graduate students not preparing for school work. The student must also satisfy the Graduate School as to his ability to do graduate work.

Registration

A graduate student in education must matriculate in the Graduate School. Application for admission to the Graduate School should be made prior to dates of registration on blanks obtained from the office of the Dean of the Graduate School. For further instructions a student should consult the Graduate School catalog.

Masters' Degrees

A graduate student in education may matriculate for a Master of Education or a Master of Arts degree. For requirements of these degrees, the student should consult both the Graduate School catalog and the duplicated material issued by the College of Education. On matriculation, the student should select a faculty adviser.

Doctors' Degrees

Programs leading to a Doctor of Philosophy or a Doctor of Education degree in Education are administered for the Graduate School by the Department of Education. For requirements of these degrees, the student should consult both the Graduate School catalog and the statement of policy relative to doctoral programs in education. If the student has not already made arrangements with a member of the faculty to advise him, he should consult with the chairman of the Education Committee on Doctoral Programs regarding a proper adviser.

CURRICULA AND REQUIRED COURSES

The undergraduate curricula in the College of Education with advisers,

for each curriculum are as follows

Academic Education

English—Marie D. Bryan
Foreign Languages—Fern D. Schneider
Mathematics—Orval L. Ulry
Natural Sciences—Orval L. Ulry
Social Sciences—Robert G. Risinger
Speech—Warren Strausbaugh

Agricultural Education (under the College of Agriculture)

Arthur M. Ahalt

Art Education

Vienna Curtiss

Business Education

Arthur S. Patrick

Elementary Education

Alvin W. Schindler
Marie Denecke
Glenn O. Blough
Leo W. O'Neill
Wesley J. Matson

Home Economics Education

Mabel Spencer

Industrial Education

R. Lee Hornbake
Glen D. Brown
Donald Maley
William F. Tierney

Music Education

Mary F. Kemble

Nursery School-Kindergarten Education

Margaret A. Stant

Physical Education (Men)

Albert W. Woods

Physical Education (Women)

Dorothy R. Mohr

General Requirements of the College

A total of 120 semester hours in addition to the University requirement in military science and physical education is required for graduation in the College of Education. In no case shall the total number of semester hours required for graduation be less than 128.

The following minimum requirements are common to all curricula: English—12 semester hours; social studies—12 semester hours as follows: G & P 1—American Government; H. 5, 6—History of American Civilization; and one of the following courses: Soc. 1 Sociology of American Life, Phil. 1 Philosophy for Modern Man, Econ. 31 Principles of Economics, or Econ. 37 Fundamentals of Economics; science or mathematics—6 semester hours; education—20 semester hours; speech—3 semester hours; physical education and military science as required by the University. (Students who qualify in classification tests in English, American History, or American Government will be exempted from a three-hour requirement in the area concerned and will select a replacement from a set of courses designated. See General Information Catalog.)

Marks in all required upper division courses in education and in subjects in major and minor fields must be C or higher. A general average of C or higher must be maintained. In order to be admitted to a course in student teaching a *student must have a grade point average of 2.275.*

Exceptions to curricular requirements and rules of the College of Education must be recommended by the student's adviser and approved by the Dean.

Students who are not enrolled in the College of Education but who are preparing to teach must meet all curricular and scholastic requirements of the College of Education.

Majors and Minors.

Students select a teaching major: for example, social science, art, music, physical education. Those electing the academic curriculum will ordinarily select both a teaching major and a teaching minor, and students in other curricula may select minors if they so desire. Advisers may waive the requirement for a minor when necessary to permit the development of an approved area such as psychology, human development, or sociology.

Students selecting an academic major and an academic minor, or those selecting *one* special teaching field such as industrial education need to take only one methods course: for example, Ed. 140 or Ind. Ed. 140. Students who select an academic major and a special fields minor, or vice versa, must take methods courses in both the major and minor fields, and should divide their student teaching between the two fields.

Academic Education

Students enrolled in this curriculum will meet the above minimum requirements in English and social science, plus the following:

- (1) Foreign language for candidates for the bachelor of arts degree: 12 semester hours provided the student enters with less than three years of foreign language credits; 6 semester hours, if he enters with three years of such credits. No foreign language is required of any student who enters with four years of language credits nor of candidates for the bachelor of science degree unless specified in the curriculum.
- (2) Science or mathematics, 12 semester hours.
- (3) Education, 22 semester hours.
- (4) Speech, 4 semester hours.

All students who elect the academic education curriculum will fulfill the preceding *general* requirements and also prepare to teach one or more school subjects which will involve meeting *specific* requirements in *particular* subject matter fields.

The *specific* requirements by subject fields are as follows:

English. A major in English requires 36 semester hours as follows:

Composition and Literature	12 semester hours
American Literature, Advanced.....	3 semester hours
Electives	21 semester hours

A minor in English requires 26 semesters. It includes the 15 semester hours prescribed for the major and 11 hours of electives.

Electives must be chosen with the approval of the adviser who will guide the student in terms of College of Education records and recommendations of the English Department.

Social Sciences. For a major in this group 36 semester hours are required, of which at least 18 hours must be in history, including 6 hours in American history and 6 hours in European history. Six of the 18 hours must be in advanced courses. For a minor in the group, 24 hours are required, as specified below, less the electives. History (including one year each of American and

European History)	18 semester hours
Economics, sociology, government, consumer education, or geography	6 semester hours
Electives in social sciences	12 semester hours

Electives should be chosen so that there will be a total of at least 3 in Economics, 6 in Geography, 6 in Government and Politics, and 6 in Sociology.

Foreign Languages. All students preparing to teach French, German, or Spanish are required to take Comparative Literature 101 and 102 and are strongly advised to take the review course for majors. Further courses in comparative literature along with work in European or Latin American history are also recommended.

Specific minimum requirements in the three languages are a semester each of intermediate and advanced conversation (Fr., Ger., or Sp. 8 and 80), a semester of grammar review, six hours of introductory survey of the literature (Fr., Ger., Sp. 75 and 76), one semester of a Life and Culture Course (Fr., Ger., Sp. 161 or 162) and six hours in literature courses numbered 100 or above. If a foreign language is offered as a second field, all major requirements must be met.

Classical Language Latin. A minor for teaching Latin requires 24 prescribed semester hours of Latin based upon two years of high school Latin or 18 prescribed semester hours of Latin plus 6 elective hours based upon four years of high school Latin. Those students with two years of high school Latin should take Latin 3, 4, 5, 51, 52, 61, 101, and 102. Those with four years of high school Latin begin with Latin 5; otherwise, the same as above with 6 hours selected from Latin 103, 104, or 105.

It is recommended that electives also be taken from Latin 70, History 153, Comparative Literature 101, English 101, and Art 9.

Mathematics. A major in mathematics requires 30 semester hours and a minor, 20 semester hours. The following courses must be included in both major and minor: Math. 2—Solid Geometry (2), Math. 18, 19—Elementary Mathematical Analysis (5, 5), and Math. 20, 21—Calculus (4, 4).

Students who have had solid geometry in high school or who pass satisfactorily an examination in this subject need not take Math. 2. Electives in mathematics are selected with the advice of the adviser.

Science. In general science a major of 40 semester hours and a minor of 30 semester hours are offered, each including the following courses: Chem. 1, 3—General Chemistry (4, 4), Zool. 1—General Zoology (4), Bot. 1—General Botany (4), Phys. 10, 11—Fundamentals of Physics (4, 4) or Phys. 1, 2—Elements of Physics (3, 3).

Other courses will be chosen subject to the approval of the student's major adviser and of the science department in which his interest lies.

Minors of 20 semester hours are offered in chemistry, in physics, and in biological sciences. A minor in biology must be supported by a one-year course in chemistry. A minor in physics must be supported by a one-year course in chemistry. A minor in chemistry must be supported by a one-year course in physics.

The requirements for major and minor are met if 52 semester hours in natural science, including the above listed courses, are offered.

Speech. A minor of 22 semester hours is offered in Speech. The minimum requirements for this minor are 12 semester hours in addition to the 10 semester hours of departmental requirements in Speech 1, 2, 3, and 4. The 12 semester hours above the departmental requirement must include 6 hours of courses numbered 100 or higher. It is the policy of the department to build a program of study in anticipation of the needs of prospective teachers, supervisors, correctionists, dramatic coaches, and other specialists in the general field of speech. All programs for the minor must be approved by the departmental adviser.

Academic Education Curriculum

<i>Freshman Year</i>	<i>—Semester—</i>	
	<i>I</i>	<i>II</i>
*Ed. 1—Freshman Orientation.....	0	0
Eng. 1, 2—Composition and American Literature.....	3	3
**Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man.....	3	....
Speech 1, 2—Public Speaking.....	2	2
*G. & P. 1—American Government.....	....	3
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
P. E. 1, 3 (Men); P. E. 2, 4 (Women).....	1	1
Hea. 2, 4—Personal and Community Health (Women).....	2	2
Science, Mathematics, Foreign language or major and minor requirements	6	6
Total	17-18	17-18

*May be taken either semester.

**Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

	Semester	
	I	II
<i>Sophomore Year</i>		
*Ed. 2—Introduction to Education.....	2	....
Eng. 3, 4—Composition and World Literature, or.....	3	3
Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
P. E. 5, 7 (Men) ; P. E. 6, 8 (Women).....	1	1
Science, Mathematics, Foreign Language or major and minor requirements	6	6
Total	15-18	15-18
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development.....	3	3
Major and Minor Requirements, Electives.....	13	13
Total	16	16
<i>Senior Year</i>		
*Ed. 140—Curriculum, Instruction and Observation.....	3	....
*Ed. 145—Principles and Methods of Secondary Education.....	3	....
*Ed. 148—Student Teaching in Secondary Schools.....	8	....
**Electives	2-3	....
*Major and Minor Requirements, Electives.....	....	16
Total	16-17	16

AGRICULTURAL EDUCATION

This curriculum is designed to prepare students for teaching vocational agriculture in high schools. To obtain full particulars on course requirements, the student should consult the catalog of the College of Agriculture.

ART EDUCATION

This curriculum is planned to meet the growing demand for teachers and supervisors of art activity. Emphasis is placed upon ways to draw out and develop the creative inclinations of beginners; to integrate art and other areas of study; to utilize art in solving social problems.

Art Education Curriculum

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation.....	0	(0)
Eng. 1, 2—Composition and American Literature.....	3	3
†Soc. 1—Sociology of American Life or Phil. 1, Philosophy for Modern Man .....	....	3
G. & P. 1—American Government.....	3	....
Speech 1, 2—Public Speaking.....	2	2
Pr. Art 1—Design .....	....	3
Pr. Art 2—Survey of Art History.....	2	....

*May be taken either semester.

**English and Social Studies majors must elect Ed. 134.

†Or Econ. 31, Principles of Economics (3 credits) or Econ. 37, Fundamentals of Economics (3 credits) in the sophomore year.

	Semester	
	I	II
<i>Freshman Year</i>		
Hea. 2, 4—Hygiene (women).....	2	2
A. S. 1, 2—Air Science (men).....	(3)	(3)
Physical Activities	1	1
**Language or electives.....	3-5	2-4
Total	16-18	16-18
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education.....	2	....
Eng. 3, 4—Composition and World Literature.....	3	3
Science or Mathematics.....	3	3
Pr. Art 3—Silk Screen Printing.....	2	....
Pr. Art 4—Three-dimensional Design.....	....	2
Pr. Art 20—Costume Design.....	3	....
Pr. Art 30—Typography and Lettering.....	....	3
Pr. Art 40, 41—Interior Design.....	1	3
Cr. 2—Simple Crafts.....	....	2
Art 13—Elementary Sculpture or Cr. 20. Ceramics.....	2	....
A. S. 3, 4—Air Science (men).....	(3)	(3)
Physical Activities	1	1
Total	17	17
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development.....	3	3
H. 5, 6—American History.....	3	3
Pr. Art 0—Professional Lectures.....	....	0
Pr. Art 21—Action Drawing or Art 104. Life Class.....	....	2-3
Cr. 5—Puppetry .....	....	3
Art 6—Still Life.....	3	....
Art 9, 11—Historical Survey of Painting, Sculpture, Architecture	3	3
**Language or electives.....	4-6	2-4
Total	16-18	16-18
<i>Senior Year</i>		
Ed. 140—Curriculum, Instruction and observation in Art.....	3	....
Pr. Art 132—Advertising Layout.....	2	....
Art 7—Landscape Painting.....	3	....
Ed. 134—Materials and Procedures for the Secondary Core Curriculum .....	....	3
El. 145—Principles and Methods of Secondary Education.....	....	3
***Ed. 148—Student Teaching in the Secondary Schools.....	....	8
Pr. Art 100—Mural Design.....	....	2
**Language or Electives.....	8-10	....
Total	16-18	16

A minimum of 24 semester hours constitutes a minor in art education.
 Required: Pr. Art 1, Pr. Art 2, Cr. 2, Art 7, Ed. 140. Electives are to be chosen from courses which carry the symbols Pr. Art, Cr. Art. Electives

**Required foreign language: 12 semester hours provided the student enters with less than three years of foreign language credit; 6 semester hours, if he enters with three years of such credit. No foreign language is required of any student who enters with four years of language credit.

***Available only during 8 weeks of the spring semester.

should be selected in consultation with the adviser to Art Education students. Scheduling of laboratory courses necessitates Student Teaching in the Secondary Schools.

BUSINESS EDUCATION

Two curricula are offered for the preparation of teachers of business subjects. The General Business Education Curriculum qualifies for teaching all business subjects except shorthand. Providing thorough training in general business, including economics, this curriculum leads to teaching positions on both junior and senior high school levels. By the proper selection of electives, persons following this curriculum may also qualify as teachers of social studies.

The Secretarial Education Curriculum is adapted to the needs of those who wish to become teachers of shorthand as well as other business subjects.

General Business Education Curriculum

	Semester	
	I	II
<i>Freshman Year</i>		
**Ed. 1—Freshman Orientation	0	0
Eng. 1, 2—Composition and American Literature.....	3	3
**G. & P. 1—American Government.....	3	....
†**Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man.....	....	3
O. T. 1—Principles of Typewriting.....	2	....
Speech 1, 2—Public Speaking.....	2	2
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Hea. 2, 4—Personal and Community Health (Women).....	2	2
P. E. 1, 3 (Men); P. E. 2, 4 (Women).....	1	1
Elect Math. 5, 6; H. 1, 2; or Science.....	3	3
†Electives	2	4
Total	18-19	18-19
<i>Sophomore Year</i>		
**Ed. 2—Introduction to Education.....	2	....
Eng. 3, 4—Composition and World Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Econ. 31, 32—Principles of Economics.....	3	3
B. A. 20, 21—Principles of Accounting.....	4	4
O. T. 2—Intermediate Typewriting.....	2	....
O. T. 10—Office Typewriting Problems.....	....	2
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
P. E. 5, 7 (Men); P. E. 6, 8 (Women).....	1	1
Total	18-21	16-19

**May be taken either semester.

†A minimum of 55\semester hours of courses in Economics, Business Administration, and Office Techniques are required.

†Or Econ 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

	Semester	
	I	II
<i>Junior Year</i>		
B. A. 180, 181—Business Law.....	4	4
B. A. 166—Business Communications.....	....	3
H. D. Ed. 100, 101—Principles of Human Development.....	3	3
B. A. 112—Records Management.....	2	....
B. A. 114—Machines Management.....	3	....
Econ. 140—Money and Banking.....	....	3
†Electives	3	3
Total	15	16

<i>Senior Year</i>		
Ed. 145—Principles and methods of Secondary Education.....	....	3
Ed. 140—Curriculum, Instruction and Observation.....	....	3
Ed. 148—Student Teaching in Secondary Schools.....	....	8
B. A. 165—Office Management.....	3	....
B. Ed. 100—Techniques of Teaching Office Skills.....	3	....
*Electives and Requirements.....	10	....
Total	16	14

Secretarial Education Curriculum

Freshman Year

Same as General Business Curriculum

Sophomore Year

**Ed. 2—Introduction to Education.....	2	....
Eng. 3, 4—Composition and World Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
O. T. 12, 13—Principles of Shorthand I, II.....	4	4
O. T. 2—Intermediate Typewriting.....	2	....
O. T. 10—Office Typewriting Problems.....	....	2
Econ. 37—Fundamentals of Economics.....	3	....
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
P. E. 5, 7 (Men); P. E. 6, 8 (Women).....	1	1
*Electives .....	....	3
Total	18-21	16-19

Junior Year

H. D. Ed. 100, 101—Principles of Human Development.....	3	3
O. T. 110—Secretarial Work.....	....	3
O. T. 118—Gregg Shorthand Dictation.....	....	3
O. T. 116—Advanced Shorthand.....	3	....
O. T. 117—Transcription.....	2	....
B. A. 20, 21—Principles of Accounting.....	4	4
B. A. 112—Records Management.....	2	....
*Electives	2	3
Total	16	16

†Required foreign language; 12 semester hours provided the student enters with less than three years of foreign language credit; 6 semester hours, if he enters with three years of such credit. No foreign language is required of any student who enters with four years of language credit.

*A minimum of 55 semester hours of courses in Economics, Business Administration and Office Techniques are required.

**May be taken either semester.

<i>Senior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
B. A. 114—Machines Management.....	3	....
B. A. 165—Office Management.....	3	....
B. A. 166—Business Communications.....	3	....
Ed. 145—Principles and Methods of Secondary Education.....	....	3
Ed. 140—Curriculum, Instruction, and Observation—Business Subjects .....	....
Ed. 148—Student Teaching in Secondary Schools.....	....	3
B. A. 180—Business Law.....	4	....
B. Ed. 100—Techniques of Teaching Office Skills.....	3	....
Total	16	14

CHILDHOOD EDUCATION

The childhood education curriculum has as its primary goal the preparation of nursery school and kindergarten teachers. It is also planned to further the personal development of the student and to provide general education in one facet of homemaking.

Observation and student teaching are done in the University Nursery School and Kindergarten on the campus and in approved schools in nearby communities. Each student is encouraged to select a minor in an allied field.

Graduates receive a B.S. degree and meet the requirements for certification for teaching kindergarten and nursery school in Maryland. Each student should have one summer of experience in working with children.

Childhood Education Curriculum

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
*C. Ed. 2—Orientation, Observation, and Record taking.....	2	....
Eng. 1, 2—Composition and American Literature.....	3	3
**Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man.....	3	....
*G. & P. 1—American Government.....	....	3
Sp. 3—Fundamentals of General American Speech.....	....	3
Botany 1—General Botany.....	4	....
Zool. 1—General Zoology.....	....	4
Hea. 2, 4—Personal and Community Health.....	2	2
P. E. 2, 4.....	1	1
*Ed. 1—Freshman Orientation.....	0	0
Total	15	16

*May be taken either semester.

**Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

	Semester	
	I	II
Sophomore Year		
Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature.....		
Hist. 5, 6—History of American Civilization.....	3	3
Music 16—Fundamentals for the Classroom Teacher.....	....	3
Ed. 52—Children's Literature.....	2	....
Foods 1—Introductory Foods.....	3	....
Nutrition 10—Elements of Nutrition.....	....	3
P. E. 6, 8.....	1	1
Electives	5	3
Total	17	16
Junior Year		
C. Ed. 100—Child Development I.....	3	....
C. Ed. 101—Child Development II.....	....	3
C. Ed. 115—Children's Activities and Activities Materials.....	....	3
C. Ed. 116—Creative Music for Young Children.....	3	....
C. Ed. 140—Curriculum, Instruction, Observation— Early Childhood Education .....	....	3
Nursing 9—Nursing and Child Health.....	....	2
Electives	10	5
Total	16	16
Senior Year		
C. Ed. 149—Teaching Nursery School.....	4-8	....
C. Ed. 159—Teaching Kindergarten.....	....	4-8
H. Ed. 100, 101—Principles of Human Development.....	3	3
C. Ed. 145—Guidance in Behavior Problems.....	3	....
Ed. 147—Audio-Visual Education.....	....	3
Ed. 107—Philosophy of Education.....	3	....
Electives	0-4	3-7
Total	17	17

ELEMENTARY EDUCATION

There are two undergraduate curriculums in elementary education. The first one is for regular undergraduate students who desire to earn the Bachelor of Science degree and to qualify for an elementary school teaching certificate. The second curriculum is for teachers in service.

Elementary Education Curriculum for Regular Undergraduate Students

This curriculum is designed for regular undergraduate students who wish to qualify for teaching positions in elementary school. Students who complete the curriculum will receive the Bachelor of Science degree, and they will meet the Maryland State Department of Education requirements for the "Bachelor of Science Certificate in Elementary Education." The curriculum also meets certification requirements in many other states, Baltimore, and District of Columbia.

Some of the academic courses need not be taken in the indicated sequence. For example, Botany 1 may be taken during the second semester of the freshman year instead of the first semester, or it may be taken during the sophomore or junior year. However, the courses in Human Development Education and certain other Education courses must be taken during the junior year, (and Ed. 149—Student Teaching in Elementary Schools should be taken during the first semester of the senior year.)

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature.....	3	3
**Soc. 1—Sociology of American Life or Phil. 1, Philosophy for Modern Man.....	3	....
*G. & P. 1—American Government.....	....	3
Bot. 1—General Botany.....	4	....
Zool. 1—General Zoology.....	....	4
Art. 15—Fundamentals of Art.....	3	....
Music 16—Music Fundamentals for the Classroom Teacher.....	....	3
*Ed. 1—Freshman Orientation.....	0	....
P. E. 1, 3 (men) P. E. 2, 4 (women).....	1	1
Health 2, 4—Personal and Community Health (Women).....	2	2
A. S. 1, 2 (Men)—Basic Air Force ROTC.....	3	3
Approved Electives (Optional)		
Totals: Women	16	16
Men	17	17

Sophomore Year

Eng. 3, 4—Composition and World Literature or Eng. 5, 6—Composition and English Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Speech 4—Voice and Diction.....	3	....
*Ed. 2—Introduction to Education.....	2	....
Chem. 1—General Chemistry.....	3	....
or Geog. 30 (Prin. of Morphology)		
or Geog. 40 (Prin. of Meteorology)		
or Physics 1 (Elements of Physics)		
Chem. 3—General Chemistry.....	....	3
or Foods 1—Introductory Foods		
or Nutrition 10—Elements of Nutrition		
or one of the other physical science courses listed above.		
Note: Only one Geography and only one Foods course may be taken.		
Math. 0—Basic Mathematics (If required).....	0	....
Math. 10—Algebra or		
Math. 5—General Mathematics.....	....	3
P. E. 5, 7 (Men) ; P. E. 6, 8 (Women).....	1	1
Health 40—Personal and Community Health (Men).....	....	3
A. S. 3, 4 (Men) Basic Air Force ROTC.....	3	3
†Approved Electives (Women)	2	4
Totals: Women	17	17
Men	18	19

*May be taken either semester.

**Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

†Number of elective hours and choice of courses must be approved by adviser. Several electives must be taken at the 100 level.

	Semester	
	I	II
Junior Year		
H. D. Ed. 100, 101—Principles of Human Development.....	3	3
Hist. 1, 2—History of Modern Europe.....	3	3
Geog. 10—General Geography.....	(3)	3
Ed. 52—Childrens Literature.....	2	....
**Ed. 153—Teaching of Reading.....	....	2
**Ed. 121—The Language Arts in the Elementary School.....	....	2
**Ed. 122—Social Studies in the Elementary School.....	....	2
**Ed. 124—Arithmetic in the Elementary School.....	....	2
**Sci. Ed. 105—Workshop in Science for Elementary Schools....	....	2
†Approved Electives	6	....
Totals	17	16
Senior Year		
Ed. 149—Student Teaching in Elementary Schools.....	16	....
Geog. 100—Regional Geography of Eastern Anglo-America.....	....	3
or Geog. 101—Regional Geography of Western Anglo-America		
or Geog. 120—Economic Geography of Europe		
Two of the following courses:		
P. E. 120—Physical Education in the Elementary School.....	....	4-5
Mus. Ed. 128—Music for the Elementary Classroom Teacher.....		
Ed. 125—Art in Elementary Schools.....		
†Approved Electives .....	....	10
Totals	16	17-18

AREA OF SPECIALIZATION IN ELEMENTARY SCHOOL PHYSICAL EDUCATION AND HEALTH EDUCATION

Students enrolled in the College of Education and majoring in elementary education may pursue an area of specialization in elementary school physical education and health education. Students interested in this area should consult with the Dean of the College of Physical Education, Health, and Recreation.

AREA OF SPECIALIZATION IN ELEMENTARY SCHOOL MUSIC EDUCATION

Students enrolled in the College of Education and majoring in elementary education may pursue an area of specialization in elementary school music education, and thereby qualify for the "Bachelor of Science Certificate in Special Subjects." In order to fulfill requirements in this area, the following courses should be taken in addition to those required in the Elementary School Curriculum:

Mus. 1 (3); Mus. 8 (3); Mus. 50 or 160 or 161 (2); Mus. 70, 71 (3, 3); Mus. 80, 81 (2, 2); Applied Music: Piano (8), Voice (4); P. E. 50 (1); and Mus. Ed. 139 (3) in place of Mus. Ed. 128 (2) in the senior year.

**Open only to students in elementary curriculum. Students who register for one double starred course must register for all five courses.

†Number of elective hours and choice of courses must be approved by adviser. Several electives must be taken at the 100 level.

Elementary Education Curriculum for Undergraduate Teachers

This curriculum is for teachers who have completed a two- or three-year curriculum in a teachers college. It is also for teachers who have two or more years of successful teaching experience which can be used in lieu of student teaching to meet certification requirements.

This curriculum, leading to the Bachelor of Science degree in elementary education, requires a total of 128 semester credits. The last 30 credits earned before the conferring of the degree must be taken with the University of Maryland.

State Department of Education requirements provide that a teacher in service may not earn more than six credits for certification purposes during a school year. The College of Education assumes no responsibility in this connection, but candidates are advised to observe the regulation.

Specific requirements for the degree are as follows: (In meeting requirements, particular attention must be given to the footnotes.)

Requirements for individuals with approximately 64 transfer credits:

Education	4
*English (not including freshman and sophomore English).....	10
**Natural Science (chemistry, physics, botany, zoology, bacteriology, entomology, general science, meteorology).....	10
***Social Science (history, government, sociology, economics, geography)	12
Electives (As many as needed to give a total of at least 128 credits)	

Requirements for individuals with approximately 96 transfer credits:

Education	2
*English (not including freshman and sophomore English).....	6
**Natural Science (as above).....	6
***Social Science (as above).....	12
Electives (As many as needed to give a total of at least 128 credits)	

HOME ECONOMICS EDUCATION

The Home Economics Education curriculum is designed for students who are preparing to teach vocational or general home economics or to engage in any phase of home economics work which requires a knowledge of teaching methods. It includes studies of all phases of home economics and the allied sciences, with professional training for teaching these subjects. A student majoring in this curriculum may also qualify for a science minor.

*If less than 12 credits were earned in English during the first two years of college, the deficiency must be made up in addition to the credits specified above.

**Not more than four semester hours of Science Education and other approved substitutions for regular science courses will be counted toward the natural science requirements.

***If the transfer credits did not include at least 3 credits in American Government, 3 credits in Sociology, Philosophy, or Economics, and 6 credits in American History, those deficiencies must be made up in addition to the 12 social credits specified above.

Home Economics Education Curriculum

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation.....	0	0
Eng. 1, 2—Composition and American Literature.....	3	3
†Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man.....	3	....
G. & P. 1—American Government.....	....	3
Speech 1, 2—Public Speaking.....	2	2
H. E. 1—Home Economics Lectures.....	0	....
Pr. Art 1—Design.....	3	....
Hea. 2, 4—Personal and Community Health.....	2	2
P. E. 2, 4.....	1	1
Tex. 1—Textiles.....	3	....
Elective .....	....	6
Total	17	17
<i>Sophomore Year</i>		
**Ed. 2—Introduction to Education.....	2	0
Eng. 3, 4—Composition and World Literature, or.....	3	3
Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Chem. 11, 13—General Chemistry.....	3	3
Pr. Art 20—Costume Design.....	3	....
Clo. 20A—Clothing.....	....	3
Foods 2, 3—Foods.....	3	3
P. E. 6, 8.....	1	1
Total	18	16
<i>Junior Year</i>		
H. E. Ed. 140—Curriculum, Instruction, and Observation.....	3	....
H. D. Ed. 100, 101—Principles of Human Development.....	3	3
Home Mgt. 150, 151—Home Management.....	3	3
Foods 101—Meal Service.....	....	2
Clo. 22—Clothing Construction.....	....	2
Nut. 110—Elements of Nutrition.....	3	....
Pr. Art 2—Survey of Art History.....	....	2
Pr. Art 40—Interior Design.....	1	....
Econ. 37—Fundamentals of Economics.....	....	3
Zool. 16—Human Physiology.....	4	....
Bact. 51—Household Bacteriology.....	....	3
Total	17	18
<i>*Senior Year</i>		
H. E. Ed. 102—Problems in Teaching Home Economics.....	....	3
H. E. Ed. 148—Teaching Secondary Vocational Home Economics	....	3
Ed. 145—Principles and Methods of Secondary Education.....	....	3
Home Mgt. 152—Practice in Management of the Home.....	....	3
Bot. 1—General Botany.....	4	....
Electives	12	....
Total	16	17

†Or Econ. 31—Principles of Economics (3) in sophomore year.

*Subjects in the senior year will be so arranged that the two semesters may be interchanged.

**May be taken either semester.

INDUSTRIAL EDUCATION

Three curriculums are administered by the Industrial Education Department: (1) Industrial Arts Education, (2) Vocational-Industrial Education, and (3) Education for Industry. The overall offering includes both undergraduate and graduate programs leading to the degrees of: Bachelor of Science, Master of Education, Master of Arts, Doctor of Education, and Doctor of Philosophy.

The Industrial Arts Education curriculum prepares people to teach industrial arts at the secondary school level. It is a four-year program leading to a Bachelor of Science degree. While trade or industrial experience contributes significantly to the background of the industrial arts teacher, previous work experience is not a condition of entrance into this curriculum. Students who are enrolled in the curriculum are encouraged to obtain work in industry during the summer months. Industrial arts as a secondary school subject area is a part of the general education program characterized by extensive shopwork and laboratory experiences.

The Vocational-Industrial Curriculum may lead either to certification as a vocational-industrial teacher with no degree involved or to a Bachelor of Science degree, including certification. The University of Maryland is designated as the institution which shall offer the "Trade and Industrial" certification courses and hence the courses which are offered are those required for certification in Maryland. The Vocation-Industrial Curriculum requires trade competence as specified by the *Maryland State Plan for Vocational Education*. A person who aspires to take the certification courses should review the State plan and he may well contact Maryland State Department of Education officials. If the person has in mind teaching in a designated city or county he may discuss his plans with the vocational-industrial official of that city or county inasmuch as there are variations in employment and training procedures.

Industrial Arts Education Curriculum

	Semester	
	I	II
<i>Freshman Year</i>		
*Ed. 1—Freshman Orientation.....	0	0
Eng. 1, 2—Composition and American Literature.....	3	3
Speech 1, 2—Public Speaking.....	2	2
**Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man	3	....
*G. & P. 1—American Government.....	....	3
Ind. Ed. 1—Mechanical Drawing.....	2	....
Ind. Ed. 34—Graphic Arts I.....	....	3
Ind. Ed. 2—Elementary Woodworking.....	2	....
Ind. Ed. 22—Machine Woodworking I.....	....	2
*Ind. Ed. 12—Shop Calculations.....	3	....
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
P. E. 1, 3—Physical Activities.....	1	1
Total	19	17

*May be taken either semester.

**Or Econ. 31—Principles of Economics (3) in the sophomore year.

	Semester	
	I	II
<i>Sophomore Year</i>		
†Ed. 2—Introduction to Education.....	2	....
Eng. 3, 4—Composition and World Literature, or		
Eng. 5, 6—Composition and English Literature.....	3	3
His. 5, 6—History of American Civilization.....	3	3
Ind. Ed. 21—Mechanical Drawing.....	2	....
Ind. Ed. 28—Electricity I.....	....	2
Ind. Ed. 26—General Metal Work.....	3	....
Chem. 1, 3—General Chemistry.....	4	4
Math. 10—Algebra.....	....	3
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
P. E. 5, 7—Physical Activities.....	1	1
Total	21	19
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development.....	3	3
Physics 1, 2—Elements of Physics.....	3	3
Ind. Ed. 41—Architectural Drawing.....	2	....
Ind. Ed. 48—Electricity II.....	....	2
Ind. Ed. 33—Automotives I.....	3	....
Ind. Ed. 160—Essentials of Design.....	....	2
Ind. Ed. 164—Shop Organization and Management.....	....	2
Ind. Ed. 166—Educational Foundations of Industrial Arts.....	2	....
Ed. 161—Principles of Guidance.....	....	3
*Electives—(shop and/or drafting).....	2	2
Electives—(unspecified)	2	2
Total	17	19
<i>Senior Year</i>		
Ind. Ed. 140—Curriculum, Instruction and Observation, Ind. Ed.	3	....
Ind. Ed. 148—Student Teaching in Secondary Schools.....	8	....
Ed. 145—Principles and Methods of Secondary Education.....	3	....
Ind. Ed. 23—Arc and Gas Welding.....	....	1
Ind. Ed. 69—Machine Shop Practice I.....	....	2
Ind. Ed. 105—General Shop.....	....	2
Ind. Ed. 110—Foundry.....	....	1
Econ. 37—Fundamental of Economics.....	....	3
*Electives—(shopwork and/or drafting).....	....	4
Electives—(professional courses).....	....	5
Total	14	18

VOCATIONAL-INDUSTRIAL CERTIFICATION

A total of 240 clock hours of instruction is required for vocational-industrial teacher certification. The courses listed below are currently required:

- Ind. Ed. 50—Methods of Teaching
- Ind. Ed. 60—Observation and Demonstration Teaching
- Ind. Ed. 164—Shop Organization and Management

†May be taken either semester.

*After the student has completed the basic courses in drafting, woodworking, metal-working, graphic arts and automotives he is to select advanced courses in one or more of these areas as advised.

- Ind. Ed. 168—Trade or Occupational Analysis
- Ind. Ed. 169—Course Construction
- Ind. Ed. 170—Principles of Vocational Education, and/or
- Ind. Ed. 171—History of Vocational Education

"The remainder of the 240 clock hours are to be met through elective industrial education courses offered by the University of Maryland and approved by the State supervisor of industrial education."* Among the courses from which electives may be chosen there are:

- Ind. Ed. 150—Training Aids Development
- Ind. Ed. 157—Tests and Measurements
- Ind. Ed. 161—Principles of Vocational Guidance
- Ind. Ed. 165—Modern Industry
- Ind. Ed. 167—Problems in Occupational Education
- **Ind. Ed. 220—Organization, Administration and Supervision of Vocational Education
- Ind. Ed. 240—Research in Industrial Arts and Vocational Education
- Ind. Ed. 248—Seminar in Industrial Arts and Vocational Education
- Ed. 150—Educational Measurement
- Ed. 160—Educational Sociology
- Ed. 161—Principles of Guidance
- Ed. 253—Guidance Information
- Ed. 261—Practicum in School Counseling
- Ed. 269—Seminar in Guidance

A person in vocational-industrial education may use his certification courses toward a Bachelor of Science degree. In doing so the general requirements of the University and College of Education must be met. A maximum of twenty semester hours of credit may be earned through examination in the trade in which the student has competence. Prior to taking the examination, the student shall provide documentary evidence of his apprenticeship or learning period and journeyman experience. For further information about credit by examination refer to the Academic Regulations of the University of Maryland.

EDUCATION FOR INDUSTRY

The Education for Industry curriculum is a four-year program leading to a Bachelor of Science degree. The purpose of the program is to prepare persons for jobs within industry and, as such it embraces four major areas of competence, (a) technical competence, (b) human relations and leadership competence, (c) communications competence, and (d) social and civic competence. The student who is enrolled in this curriculum is required to obtain work in industry in accordance with the plan described in the course, Industrial Education 124 a, b.

*Maryland (State Department of Education). The Maryland State Plan for Vocational Education 1947-1952, p. 108.

**A course bearing a "200" number is open only to graduate students.

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature.....	3	3
*Soc. 1—Sociology of American Life.....	3	...
*G. & P. 1—American Government.....	...	3
Ind. Ed. 1—Mechanical Drawing.....	2	...
Ind. Ed. 12—Shop Calculations.....	3	...
Ind. Ed. 21—Mechanical Drawing.....	...	2
Ind. Ed. 22—Machine Woodworking I.....	2	...
Ind. Ed. 23—Arc and Gas Welding.....	...	1
Ind. Ed. 69—Machine Shop Practice I.....	...	2
Ind. Ed. 110—Foundry.....	...	1
Sp. 7—Public Speaking.....	2	...
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
P. E. 1, 3—Physical Activities.....	1	1
Math. 10—Algebra .....	...	3
Total	19	19

Sophomore Year

Eng. 3, 4—Composition and World Literature or		
Eng. 5, 6—Composition and English Literature.....	3	3
Ind. Ed. 24—Sheet Metal Work.....	2	...
B. A. 10, 11—Organization and Control.....	2	2
Phys. 1, 2—Elements of Physics or		
Phys. 10, 11—Fundamentals of Physics.....	3 or 4	3 or 4
Math. 11—Trigonometry and Analytic Geometry.....	2	...
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
P. E. 5, 7—Physical Activities.....	1	1
H. 5—History of American Civilization.....	...	3
Econ. 37—Fundamentals of Economics.....	...	3
Total	16 or 17	18 or 19

Junior Year

H. 6—History of American Civilization.....	3	...
Psych. 1—Introduction to Psychology.....	3	...
Psych. 2—Applied Psychology.....	...	3
Chem. 1, 3—General Chemistry.....	4	4
Econ. 160—Labor Economics.....	3	...
†Ind. Ed. 124a—Organized and Supervised Work Experience....	3	...
Ind. Ed. 143, 144—Industrial Safety Education.....	2	2
B. A. 160—Personal Management.....	...	3
Soc. 115—Industrial Sociology.....	...	3
Electives	3	3
Total	21	18

*May be taken either semester.

†Must be pursued concurrently with the regular Summer Sessions between the sophomore and junior and the junior and senior years respectively.

<i>Senior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
B. A. 163—Industrial Relations.....	3	....
B. A. 167—Job Evaluation and Merit Rating.....	2	....
*Ind. Ed. 124b—Organized and Supervised Work Experience.....	3	....
Ind. Ed. 164—Shop Organization and Management.....	....	2
Ind. Ed. 165—Modern Industry.....	....	2
Ind. Ed. 168—Trade or Occupational Analysis.....	2	....
Psych. 121—Social Psychology.....	....	3
Electives	5	8
Total	15	15

MUSIC EDUCATION

The Music Education curriculum affords pre-service preparation in the specialized field of music education and leads to the degree of Bachelor of Science in Education with a major in Public School Music. The curriculum provides training in both the choral and instrumental fields of music and is planned to meet the growing demand for special teachers and supervisors in those areas. In the senior year the student may concentrate in either elementary-school or secondary-school requirements.

The major in music education must include 20 semester hours in applied music with at least Music 53 on a principal instrument and four to six semester hours in ensemble (orchestra, chorus, etc.).

A minor in the field may be received with 24 semester hours in music education, theory, and history; 8 semester hours in applied music; two semester hours in ensemble; Ed. 140 in music; and student teaching divided between the student's major and minor fields. The 24 specified hours must include Music 1, 7, 8, 17, 18, 50, 70, 80 or 81, and 121.

Music Education Curriculum

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Ed. 1—Freshman Orientation.....	0	....
Eng. 1, 2—Composition and American Literature.....	3	3
**†Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man.....	3	....
**G. & P. 1—American Government.....	....	3
Music 1—Introduction to Music.....	....	3
Music 7, 8—Theory of Music.....	3	3
Applied Music—Class Voice or Class Piano.....	....	2
Applied Music	2	2
P. E. 50—Rhythmic Analysis and Movement.....	1	....
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Ensemble—Music 4, 5, 6, 10 or 15.....	1	1
Hea. 2, 4—Personal and Community Health (Women).....	2	2
P. E. 1, 3—(Men); P. E. 2, 4—(Women).....	1	1
Total	18-19	18-19

*Must be pursued concurrently with the regular Summer Sessions between the sophomore and junior and the junior and senior years respectively.

**May be taken either semester.

†Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

	Semester	
	I	II
<i>Sophomore Year</i>		
*Ed. 2—Introduction to Education.....	2	0
Eng. 3, 4 or 5, 6—Composition and World or English Literature.....	3	3
Mathematics or Natural Science.....	3	3
Music 17, 18—Dictation and Sight-Singing.....	2	2
Music 70, 71—Harmony.....	3	3
Applied Music—Class Voice of Class Piano.....	0	2
Applied Music	2	2
Ensemble—Music 4, 5, 6, 10, or 15.....	1	1
A. S. 3, 4—Basic Air Force ROTC (Men).....	3	3
P. E. 5, 7—(Men) ; P. E. 6, 8—(Women).....	1	1
Total	17-20	17-20
<i>Junior Year</i>		
History 5, 6—History of American Civilization.....	3	3
H. D. Ed. 100, 101—Principles of Human Development.....	3	3
Speech 4—Voice and Diction.....	3	....
Music 80, 81—Class Study of Instruments.....	2	2
Music 120, 121—History of Music.....	3	3
Music 150—Keyboard Harmony.....	....	2
Music 160, 161—Advanced Conducting Methods.....	2	2
Applied Music	2	2
Ensemble—Music 4, 5, 6, 10, or 15... ..	1	1
Total	19	18
<i>Senior Year (Secondary school concentration).</i>		
Ed. 140—Curriculum, Instruction and Observation.....	3	....
Ed. 145—Principles and Methods of Secondary Education.....	3	....
*Ed. 148—Student Teaching in the Secondary Schools.....	....	8
Music Ed. 132—Music in the Secondary School.....	....	2
Applied Music	2	2
Electives	3	....
Ensemble—Mus. 4, 5, 6, 10, or 15.....	1	....
Total	12	12
<i>Senior Year (Elementary school concentration).</i>		
Ed. 52—Children's Literature.....	2	....
*Ed. 149—Student Teaching in the Elementary School.....	....	8
Mus. Ed. 128—Music for the Elementary Classroom Teacher.....	....	2
Mus. Ed. 139—Music for the Elementary School Specialist.....	3	....
Mus. Ed. 170—Materials and Methods for Class Piano Instruction.....	2	....
Applied Music	2	2
Ensemble—Music 4, 5, 6, 10, or 15.....	1	....
Electives	5	....
Total	15	12

PHYSICAL EDUCATION AND HEALTH EDUCATION

This curriculum prepares students (1) for teaching physical education in the secondary schools, (2) for coaching, and (3) for leadership in youth and adult groups which offer a program of physical activity. The first two years

*May be taken either semester.

of this curriculum to be an orientation period in which the student has an opportunity to gain an adequate background in general education as well as in those scientific areas closely related to this field of specialization. In addition, there is considerable emphasis placed upon the development of skills in a wide range of motor activities. This basic training makes it possible for the student to select related areas, especially in the fields of biology, health education, and recreation as fields of secondary interest. These materially increase the vocational opportunities which are available to a graduate in physical education.

Physical Education Curriculum

MEN

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
***Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man	3	....
*G. & P. 1—American Government.....	....	3
Zool. 1—General Zoology .....	....	4
Sp. 7—Public Speaking.....	2	....
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	....
P. E. 50—Rhythmic Analysis and Movement.....	1	....
P. E. 59—Skills in Folk, Square and Social Dance.....	....	1
P. E. 61, 63—Sport Skills and Gymnastics.....	2	2
A. S. 1, 2—Basic Air Force R. O. T. C.....	3	3
Total	16	16

Note: Students classified in Group 3 on Mathematics Entrance Test must take Math 0.

Sophomore Year

Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Zool. 14, 15—Human Anatomy and Physiology.....	4	4
Physical Science Group Requirement (Mathematics, Physics or Chemistry)	3-4	....
Hea. 40—Personal and Community Health.....	....	3
P. E. 65, 67—Sport Skills and Gymnastics.....	2	2
A. S. 3, 4—Basic Air Force R. O. T. C.....	3	3
Total	18-19	18

Junior Year

H. D. Ed. 100, 101—Principles of Human Development I, II.....	3	3
P. E. 77—Methods of Teaching Aquatics.....	....	2
P. E. 100—Kinesiology.....	4	....
P. E. 101, 103—Organization and Officiating in Intramurals.....	1	1
P. E. 113, 115—Methods and Materials for Secondary Schools....	3	1
P. E. 123 or 125—Coaching Athletics.....	3	....
P. E. 180—Measurement in Physical Education and Health.....	....	3
Hea. 50—First Aid in Safety.....	....	1
Electives (See Note 1).....	5	8
Total	19	19

*May be taken either semester.

**Or Econ. 31—Principles of Economics (3 credits) or Econ. 37—Fundamentals of Economics (3 credits) in the sophomore year.

	Semester	
	I	II
<i>Senior Year</i>		
P. E. 140—Curriculum, Instruction and Observation.....	....	3
P. E. 160—Theory of Exercise.....	3	....
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health.....	....	3
Ed. 145—Principles and Methods of Secondary Education.....	....	3
Ed. 148—Student Teaching in the Sec. Sch. (See Note 2).....	....	8
Electives (See Note 1).....	15	....
Total	18	17

Note 1: Every student in Junior or Senior year must elect either Hea. 120, P. E. 120, or Rec. 170).

Note 2: May be taken either semester. When Ed. 148 is scheduled, Ed. 145, P. E. 140, and P. E. 190 must be scheduled concurrently.

WOMEN

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
**Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man	3	....
G. & P. 1—American Government.....	....	3
Zool. 1—General Zoology.....	....	4
Sp. 7—Public Speaking.....	2	....
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	....
P. E. 40—Basic Body Controls.....	1	....
P. E. 50—Rhythmic Analysis and Movement.....	2	....
P. E. 52—Dance Techniques.....	....	1
P. E. 56—Skills and Methods in Folk and Square Dance.....	....	1
P. E. 62, 64—Elementary Techniques of Sports and Gymnastics	2	2
Electives .....	....	2
Total	15	16

Note: P. E. 72 may be required, depending upon swimming ability of student.

Note: Students classified in Group 3 on Mathematics Entrance test must take Math 0.

Sophomore Year

Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Zool. 14, 15—Human Anatomy and Physiology.....	4	4
Physical Science Group Requirement—(Mathematics, Physics or Chemistry)	3-4	....
Hea. 40—Personal and Community Health.....	....	3
P. E. 54—Dance Techniques.....	1	....
P. E. 58—Skills and Methods in Social Dance.....	....	1
P. E. 60—Dance Composition.....	....	2
P. E. 66, 68—Techniques of Sports.....	2	2
Total	16-17	18

Note: P. E. 74 and/or 76 may be required, depending upon swimming ability of student.

*May be taken either semester.

**Or Econ. 31—Principles of Economics (3 credits) or Econ. 37—Fundamentals of Economics (3 credits) in the sophomore year.

<i>Junior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
H. D. Ed. 100, 101—Principles of Human Development I, II.....	3	3
P. E. 78—Methods of Teaching Aquatics.....	...	2
P. E. 100—Kinesiology.....	4	...
P. E. 114, 116—Methods in Physical Education for Secondary Schools	3	1
P. E. 124, 126—Practicum in Leadership.....	2	2
P. E. 180—Measurement in Physical Education and Health.....	3	...
Hea. 50—First Aid and Safety .....	...	1
Electives (See Note 1).....	...	7
Total	15	16

Note 1: Every student in Junior or Senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

Senior Year

P. E. 140—Curriculum, Instruction and Observation.....	...	3
P. E. 160—Theory of Exercise.....	3	...
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health.....	...	3
Ed. 145—Principles and Methods of Secondary Education.....	...	3
Ed. 148—Student Teaching in the Sec. Sch. (See Note 2).....	...	8
Electives (See Note 1).....	12	...
Total	15	17

Note 1: Every student in Junior or Senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

Note 2: May be taken either semester. When Ed. 148 is taken, Ed. 145, P. E. 140 and P. E. 190 must be scheduled concurrently.

Minor in Physical Education

20 semester hours in Physical Education and 4 semester hours in cognate areas.

Required Courses:

Men—P. E. 30; P. E. 61, 63, 65, 67, (2-6*) P. E. 113; P. E. 101 or 103,

Women—P. E. 30; P. E. 62; 64, 66, 68, (2-6*); P. E. 114; or 116; P. E. 124 or 126.

Elective Courses:

Men and Women—P. E. 78, 100; P. E. 123; P. E. 125; P. E. 140; P. E. 160; P. E. 180; P. E. 190; Hea. 110; Hea. 120; Rec. 30; Rec. 40; Rec. 100; Rec. 150.

If planning to teach, the cognate courses for men should be Hea. 40 and Hea. 50; for women, Hea. 50 and Hea. 120. Men should include P. E. 123 or P. E. 125 if planning to coach.

Note: To be certified to teach in Maryland, 30 semester hours are required in this area, including the following or equivalent: Zool. 14, 15; Hea. 50; P. E. 100, 140; Ed. 145 and Ed. 148 including at least 25 hours of student teaching.

HEALTH EDUCATION

This curriculum is designed to prepare the student to give leadership in the development of the school health education program including (1) health services (2) healthful environment, and (3) health teaching. Graduates in this area have placement opportunities in schools, colleges, and in public and private health agencies. The minor is planned to be particularly suitable for students who are majoring in physical education, education, home economics, and nurseryschool-kindergarten education.

Health Education Curriculum

MEN

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
* **Soc. 1—Sociology of American Life or Phil. 1—Philosophy of Modern Man.....	3	....
*G. & P. 1—American Government.....	....	3
Zool. 1—General Zoology.....	....	4
Sp. 7—Public Speaking.....	2	....
Hea. 10—Orientation to Health Education.....	....	1
Hea. 30—Introduction to Physical Education, Rec. & Health.....	2	....
P. E. 1—Orientation to Physical Education.....	1	....
P. E. 3—Development and Combative Sports.....	....	1
Chem. 11, 13—General Chemistry.....	3	3
A. S. 1, 2—Basic Air Force R.O.T.C.....	3	3
Total	17	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Zool. 14, 15—Human Anatomy and Physiology.....	4	4
Hea. 40—Personal and Community Health.....	3	....
Hea. 50—First Aid and Safety.....	....	1
Hea. 70—Safety Education.....	....	3
P. E. 5—Team and Individual Sports.....	1	....
P. E. 7—Recreational Activities.....	....	1
A. S. 3, 4—Basic Air Force R.O.T.C.....	3	3
Electives	2	....
Total	19	18
<i>Junior Year</i>		
Bact. 1—General Bacteriology	4	....
Bact. 105—Epidemiology and Public Health.....	....	4
Nut. 10—Elements of Nutrition.....	....	3
Ed. 150—Educational Measurement or Hea. 180—Measurement in Physical Education and Health.....	2-3	....
Hea. 110—Introduction to School & Community Health Services	2	....
Hea. 120—Methods & Materials of School Health Instruction	....	3
H. D. Ed. 100, 101—Principles of Human Development I, II.....	3	3
Psych. 1—Introduction to Psychology	3	....
Psych. 5—Mental Hygiene .....	....	3
Electives	3	2
Total	17-18	18
<i>Senior Year</i>		
Hea. 140—Curriculum, Instruction & Observation.....	3	....
Hea. 150—Health Problems of the School Child.....	....	3
Ed. 145—Principles and Methods of Secondary Education.....	3	....
Ed. 148—Student Teaching in the Secondary Schools.....	8	....
Electives .....	....	14
Total	16-17	17
Note: When Ed. 148 is taken, Ed. 145, H. E. 140 and Hea. 190 must be scheduled concurrently.		

*May be taken either semester.

**Or Econ. 31—Principles of Economics (3 credits) or Econ. 37—Fundamentals of Economics (3 credits) in the sophomore year.

WOMEN

	(Semester)	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
***Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man.....	3	....
*G. & P. 1—American Government.....	....	3
Zool. 1—General Zoology.....	....	4
Sp. 7—Public Speaking.....	2	....
Hea. 10—Orientation to Health Education.....	....	1
Hea. 30—Introduction to Physical Education, Recreation and Health	2	....
P. E. 4—Basic Skills of Sports and Rhythms.....	1	1
Chem. 11, 13—General Chemistry.....	3	3
Electives	3	3
Total	17	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Zool. 14, 15—Human Anatomy and Physiology.....	4	4
Hea. 40—Personal and Community Health.....	3	....
Hea. 50—First Aid and Safety.....	....	1
Hea. 70—Safety Education .....	....	3
P. E. 6, 8—Selected Sports and Dance.....	1	1
Electives	3	3
Total	17	18
<i>Junior Year</i>		
Bact. 1—General Bacteriology	4	....
Bact. 105—Epidemiology and Public Health.....	....	4
Nut. 10—Elements of Nutrition.....	....	3
Ed. 150—Educational Measurement or Hea. 180—Measurement in Physical Education and Health.....	2-3	....
Hea. 110—Introduction to School and Community Health Services .....	....	3
Hea. 120—Methods and Materials of School Health Instruction .....	....	3
H. D. Ed. 100, 101—Principles of Human Development I, II.....	3	3
Psych. 1—Introduction to Psychology.....	3	....
Psych. 5—Mental Hygiene .....	....	3
Electives	3	2
Total	17-18	18
<i>Senior Year</i>		
Hea. 140—Curriculum, Instruction and Observation.....	3	....
Hea. 150—Health Problems of the School Child.....	....	3
Hea. 190—Administration and Supervision of School Health Education	2-3	....
Ed. 145—Principles and Methods of Secondary Education.....	3	....
Ed. 148—Student Teaching in the Secondary Schools.....	8	....
Electives .....	....	14
Total	16-17	17

Note: When Ed. 148 is taken, Ed. 145, H. E. 140 and Hea. 190 must be scheduled concurrently.

*May be taken either semester.

**Or Econ. 31—Principles of Economics (3 credits) or Econ. 37—Fundamentals of Economics (3 credits) in the sophomore year.

Minor in Health Education

13 semester hours in Health Education and 12 semester hours in related areas.

Required Courses

Hea. 2, 4, or Hea. 40 (Women); Hea. 40 (Men); Hea. 50 (1), Hea. 110 (2), Hea. 120 (3) and Hea. 150 (3).

Elective Courses in related areas:

6 semester hours of biological sciences and 6 semester hours of psychology or human development.

Minor in Safety Education

Students wishing to obtain a minor in Safety Education and become certified to teach Driver Education in junior and senior high schools should take the following courses: Hea. 50 (1), Hea. 70 (3), Hea. 80 (3), Hea. 105 (3) and Hea. 145 (3).

COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students has registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

EDUCATION**Courses Primarily for Freshmen and Sophomores****Ed. 1. Freshman Orientation (0).**

Required of all freshmen.

(Schneider.)

Ed. 2. Introduction to Education (2).

First and second semesters. Required of sophomores in Education. Section 1—Elementary; Section 2—Secondary. An exploratory course designed to introduce students to responsibilities of teachers for understanding their pupils, the way learning takes place, the need for planning, types of competencies needed, and certification requirements. Laboratory fee, \$1.00. (Schneider-Matson.)

Ed. 6. Observation of Teaching (1).

Twenty hours of directed observation. Reports, conferences, and criticisms.

Ed. 52. Children's Literature (2).

First and second semesters. Prerequisite, English 1, 2. A study of literary values in prose and verse for children. (Bryan.)

Ed. 90. Development and Learning (3).

A study of the principles of learning and their application to school situations. Designed to meet the usual teacher-certification requirement for educational psychology.

For Advanced Undergraduates and Graduates**Ed. 100. History of Education in Western Civilization (3).**

Educational institutions through the ancient, mediaeval, and early modern periods in the western civilization, as seen against a background of socio-economic development. (Wiggin.)

Ed. 102. History of Education in the United States (3).

A study of the origins and development of the chief features of the present system of education in the United States. (Wiggin.)

Ed. 107. Philosophy of Education (2-3).

A study of the great educational philosophers and systems of thought affecting the development of modern education. (Wiggin.)

Ed. 121. The Language Arts in the Elementary School (2).

Teaching of spelling, handwriting, oral and written expression, and creative expression. Special emphasis given to skills having real significance to pupils.

Ed. 122. The Social Studies in the Elementary School (2).

Consideration given to curriculum, organization and methods of teaching, evaluation of newer materials, and utilization of environmental resources. (O'Neill.)

Ed. 123. The Child and the Curriculum (3).

Relationship of the elementary school curriculum to child growth and development. Recent trends in curriculum organization; the effect of environment on learning; readiness to learn; and adapting curriculum content and methods to maturity levels of children. (Denecke.)

Ed. 124. Arithmetic in the Elementary School (2).

Emphasis on materials and procedures which help pupils sense arithmetical meanings and relationships. Helps teachers gain a better understanding of the number system and arithmetical processes. (Schindler.)

Ed. 125. Art in Elementary Schools (2).

Concerned with art methods and materials for elementary schools. Includes laboratory experiences with materials appropriate for elementary schools. (Lembach.)

Ed. 127. Teaching in Elementary Schools (2-6).

An overview of elementary school teaching designed for individuals without specific preparation for elementary school teaching or for individuals without recent teaching experience.

Ed. 130. The Junior High School (2-3).

A general overview of the junior high school. Purposes, functions, and characteristics of this school unit; a study of its population, organization, program of studies, methods, staff, and other similar topics, together with their implications for prospective teachers.

Ed. 133. Methods of Teaching Social Studies in Secondary School (2-3).

Designed to give practical training in the everyday teaching situations. Use of various less techniques, audio and visual aids, reference materials, and testing programs and the adaption of teaching methods to individual and group differences. Present tendencies and aims of instruction in the social studies. (Risinger.)

Ed. 134. Materials and Procedures for the Secondary School Core Curriculum (3).

This course is designed to bring practical suggestions to teachers who are in charge of core classes in junior and senior high schools. Materials and teaching procedures for specific units of work are stressed. Fee, \$1.00. (Schneider.)

Ed. 137. Methods of Teaching Mathematics and Science in Secondary School (2-3).

Considers such topics as objectives, selection, organization, and presentation of subject matter, appropriate classroom methods and procedures, instructional materials and evaluation of learning experiences in the areas of mathematics, the physical sciences, and the biological sciences. Laboratory fee, \$2.00.

Ed. 140. Curriculum, Instruction, and Observation (3).

First and second semesters. Offered in separate sections for the various subject matter areas, namely, English, social studies, foreign language, science, mathematics, art education, business education, industrial education, music education, and physical education. Registration cards must include the subject-matter area as well as the name and number of the course. Graduate credit is allowed only by special arrangement. The objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks, and other instructional materials, measurement, and other topics pertinent to the particular subject matter area are treated. Twenty periods of observation. (Staff.)

Ed. 141. Methods of Teaching English in Secondary Schools (3).

Content and method in teaching the English language arts. (Bryan.)

Ed. 145. Principles and Methods of Secondary Education (2-3).

First and second semesters and summer session. This course is concerned with the principles and methods of teaching in junior and senior high schools. Instructional problems common to all of the subject fields are considered in relation to the needs and interests of youth, the urgent social problems of today, and the central values to which our society is committed. (Denemark.)

Ed. 147. Audio-Visual Education (3).

First semester and summer session. Sensory impressions in their relation to learning; projection apparatus, its cost and operation; slides, film-strips, and films; physical principles underlying projection; auditory aids to instruction; field trips; pictures, models, and graphic materials; integration of sensory aids with organized instruction. Recommended for all education students. Laboratory fee, \$1.00. (Maley.)

Ed. 148. Student Teaching in Secondary Schools (2-8).

First and second semesters. Prerequisite, Ed. 140, grade-point average of 2.275, and approval of faculty. Undergraduate credit only. Laboratory fee, \$30.00. Application forms for this course must be submitted to the Director of Student Teaching not less than ninety days before registration. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 8 credits, full time for one-half of one semester is devoted to this work. For experienced teachers and some graduate students, the time and credit may be reduced. (Staff.)

Ed. 149. Student Teaching in Elementary Schools (8-16).

A grade-point average of 2.275 and approval of the faculty required. Undergraduate credit only. Application forms for this course must be filed at least ninety days before registration. No other courses may be taken during the semester of student teaching. Laboratory fee, \$30.00. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 16 credits, full time for one semester is devoted to this work. For experienced teachers, the time and credit may be reduced. (Blough, Matson, and O'Neill.)

Ed. 150. Educational Measurement (2).

First and second semesters; Summer. Constructing and interpreting measures of achievement.

Ed. 153. The Teaching of Reading (2).

Concerned with the fundamentals of developmental reading instruction, including reading readiness, use of experience records, procedures in using basal readers, the improvement of comprehension, teaching reading in all areas of the curriculum, uses of children's literature, the program in word analysis, and procedures for determining individual needs. (Matson, Schindler.)

Ed. 154. Remedial Reading Instruction (2).

For supervisors and teachers who wish to help retarded readers. Concerned with causes of reading difficulties, the identification and diagnosis of retarded pupils, instructional materials, and teaching procedures. Prerequisite, Ed. 153 or the equivalent. (Schindler.)

Ed. 155. Laboratory Practices in Reading for Elementary and Secondary Schools (2-4).

A laboratory course in which each student has one or more pupils for analysis and instruction. At least one class meeting per week to diagnose individual cases and to plan instruction. Prerequisite, Ed. 153 or Ed. 154. (Schindler.)

Ed. 160. Educational Sociology (2).

Deals with data of the social sciences which are germane to the work of teachers. Implications of democratic ideology for educational endeavor, educational tasks imposed by changes in population and technological trends, the welfare status, of pupils, the socio-economic attitudes of individuals who control the schools, and other elements of community background. (Risinger.)

Ed. 161. Principles of Guidance (3).

First and second semesters; Summer. Overview of principles and practices of guidance-oriented education. (Byrne.)

Ed. 162. Mental Hygiene in the Classroom (2).

The practical application of the principles of mental hygiene to classroom problems. (Denecke.)

Ed. 163, 164, and 165. Community Study Laboratory I, II and III (2, 2, 2).

Involves experience from the educational standpoint with the agencies, institutions, cultural patterns, living conditions, and social processes which play significant roles in shaping the behavior of children and adults and which must be understood by individuals working toward school and community improvement. Each participant becomes a member of a group in a given area of study and concentrates on problems which have direct application in his school situation. Readings are integrated with techniques of study. (Schindler.)

Ed. 170. Introduction to Special Education (2).

Designed to give an understanding of the needs of all types of exceptional children, stressing preventive and remedial measures.

Ed. 171. Education of Retarded and Slow-Learning Children (2).

A study of retarded and slow-learning children, including discovery, analysis of causes, testing techniques, case studies, and remedial educational measures. (Denecke.)

Ed. 187. Field Experience in Education (1-4).

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|-------------------------------|------------------------------------|
| a. Adult Education | e. Higher Education |
| b. Curriculum and Instruction | f. Industrial Arts Education |
| c. Educational Administration | g. Supervisor |
| d. Guidance and Personnel | h. Vocational Industrial Education |

Planned field experience may be provided for selected graduate students who have had teaching experience and whose application for such field experience has been approved by the Education faculty. Field experience is offered in a given area to both major and non-major students. Prerequisites, at least six semester hours in Education at the Uni-

versity of Maryland plus such other prerequisites as may be set by the major area in which the experience is to be taken.

Ed. 188. Special Problems in Education (1-3).

Prerequisite, consent of instructor. Available only to mature students who have definite plans for individual study of approved problems. (Staff.)

NOTE: Course cards must have the title of the problem and the name of the faculty member who has approved it.

Ed. 189. Workshops, Clinics, and Institutes (1-6).

The following types of educational enterprises may be scheduled under this course heading: workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals, and supervisors. The maximum number of credits that may be earned under this course symbol toward any degree is six semester hours; the symbol may be used two or more times until six semester hours have been reached.

Ed. 190. Problems and Trends in Contemporary American Education (2-4).

Designed to present a broad overview of some key issues and trends that relate to the improvement of instruction at elementary, secondary and teacher education levels. Lectures by visiting educators of national prominence will be reviewed and analyzed in discussion groups led by regular University staff members. (Denemark and Blough.)

For Graduates

Ed. 202. The Junior College (2).

The philosophy and development of the junior college in the United States with emphasis on curriculum and administrative controls.

Ed. 203. Problems in Higher Education (3).

A study of present problems in higher education.

(Wiggin.)

Ed. 205. Comparative Education (3).

A study of historical changes in ways of looking at national school systems, and of problems in assessing their effectiveness.

(Wiggin.)

Ed. 206. Seminar in Comparative Education (2).

Ed. 207. Seminar in History and Philosophy of Education (2).

(Wiggin.)

Ed. 209. Adult Education (3).

A study of adult education in the United States, with attention to adult abilities and intelligence, programs of adult education, and a rationale for adult education.

(Wiggin.)

Ed. 210. The Organization and Administration of Public Education (3).

First semester. The basic course in school administration. Deals with the organization and administration of school systems—at the local, state, and federal levels; and with the administrative relationships involved. (Newell.)

Ed. 211. The Organization, Administration, and Supervision of Secondary Schools (2).

Second semester. The work of the secondary school principal. Includes topics such as personnel problems, supervision, school-community relationships, student activities, schedule making, and internal financial accounting. (Schneider.)

Ed. 212. School Finance and Business Administration (3).

An introduction to principles and practices in the administration of the public school finance activity. Sources of tax revenue, the budget, and the function of finance in the educational program are considered. (Van Zwoll.)

Ed. 214. School Plant Planning (2).

An orientation course in which the planning of school buildings is developed as educational designing with reference to problems of site, building facilities, and equipment. (Van Zwoll.)

Ed. 216. High School Supervision (2).

Prerequisite, teaching experience. Deals with recent trends in supervision; the nature and function of supervision; planning supervisory programs; evaluation and rating; participation of teachers and other groups in policy development; school workshops; and other means for the improvement of instruction. (Schneider.)

Ed. 217. Administration and Supervision in Elementary Schools (2).

Problems in administering elementary schools and improving instruction. (Denecke.)

Ed. 218. School Surveys (2-6).

Prerequisite, consent of instructor. Includes study of school surveys with emphasis on problems of school organization and administration, finance and school plant planning. Field work in school surveys is required. (Newell.)

Ed. 219. Seminar in Educational Administration and Supervision (2-4).

Prerequisite, at least four hours in educational administration and supervision or consent of instructor. A student may register for two hours and may take the seminar a second time for an additional two hours.

Ed. 220. Pupil Transportation (2).

Includes consideration of the organization and administration of state, county, and district pupil transportation service with emphasis on safety and economy. The planning of bus routes; the selection and training of bus drivers, and maintenance mechanics; the specification of school buses; and procurement procedures are included.

Ed. 221. Advanced School Plant Planning (2).

This is an advanced course in school plant planning problems. Emphasis is given to analysis of the educational program and planning of physical facilities to accommodate that program. Ed. 214 is a prerequisite to this course. However, students with necessary background may be admitted without completion of Ed. 214. (Van Zwoll.)

Ed. 222. Seminar in School Supervision (2).

Prerequisite, Ed. 216. Prerequisite may be waived upon approval of instructor.

Ed. 223. Practicum in Personnel Relationships (2-6).

Prerequisite, consent of instructor. Enrollment limited. Designed to help teachers, school administrators, and other school staff members to learn to function more effectively in developing educational policy in group situations. Each student in the course is required to be working concurrently in the field with a group of school staff members or citizens on actual school problems. (Newell.)

Ed. 224. Apprenticeship in Education (6-9).

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|-------------------------------|------------------------------------|
| a. Curriculum and Instruction | e. Industrial Arts Education |
| b. Educational Administration | f. Supervision |
| c. Guidance and Personnel | g. Vocational Industrial Education |
| d. Higher Education | |

Apprenticeships in the major area of study are available to selected students whose application for an apprenticeship has been approved by the Education faculty. Each apprentice is assigned to work for at least a semester full-time or the equivalent with an appropriate staff member of a cooperating school, school system, or educational institution or agency. The sponsor of the apprentice maintains a close working relationship with the apprentice and the other persons involved. Prerequisites, teaching experience, a master's degree in Education, and at least six semester hours in Education at the University of Maryland. (Newell.)

Ed. 225. School Public Relations (3).

A study of the interrelationships between the community and the school. Public opinion, propaganda, and the ways in which various specified agents and agencies within the school have a part in the school public relations program are explored. (Van Zwoll.)

Ed. 226. Child Accounting (2).

An inquiry into the record keeping activities of the school system, including an examination of the marking system. (Van Zwoll.)

Ed. 227. Public School Personnel Administration (3).

A comparison of practices with principles governing the satisfaction of school personnel needs, including a study of tenure, salary schedules, supervision, rewards, and other benefits. (Van Zwoll.)

Ed. 229. Seminar in Elementary Education (2).

Primarily for individuals who wish to write seminar papers. Enrollment should be preceded by at least 12 hours of graduate work in Education.

Ed. 230. Elementary School Supervision (2).

Concerned with the nature and function of supervision, various supervisory techniques and procedures, human relationship factors and personal qualities for effective supervision. (Denecke.)

Ed. 234. The School Curriculum (2-3).

A foundations course embracing the curriculum as a whole from early childhood through adolescence, including a review of historical developments, an analysis of conditions affecting curriculum change, an examination of issues in curriculum making, and a consideration of current trends in curriculum design. (Hovet.)

Ed. 235. Principles of Curriculum Development (3).

Curriculum planning, improvement, and evaluation in the schools; principles for the selection and organization of the content and learning experiences; ways of working in classroom and school on curriculum improvement. (Hovet.)

Ed. 237. Curriculum Theory and Research (2).

The school curriculum considered within the totality of factors affecting pupil behavior patterns, an analysis of research contributing to the development of curriculum theory, a study of curriculum theory as basic to improved curriculum design, the function of theory in guiding research, and the construction of theory through the utilization of concepts from the behavioral research disciplines. (Hovet.)

Ed. 239. Seminar in Secondary Education (2).**Ed. 242. Coordination in Work-Experience Programs (2).**

Surveys and evaluates the qualifications and duties of a teacher-coordinator in a work-experience program. Deals particularly with evolving patterns in city and county schools in Maryland, and is designed to help teacher-coordinators, guidance counselors, and others in the supervisory and administrative personnel concerned with functioning relationships of part-time cooperative education in a comprehensive educational program. (Brown.)

Ed. 243. Problems of Teaching Arithmetic in Elementary Schools (2).

Implications of current theory and results of research for the teaching of arithmetic in elementary schools. (Schindler.)

Ed. 244. Problems of Teaching Language Arts in Elementary Schools (2).

Implications of current theory and results of research for the language arts in the elementary schools.

Ed. 245. Introduction to Research (2).

Intensive reading, analysis, and interpretation of research, applications to teaching fields; the writing of abstracts, research reports, and seminar papers. (Hovet.)

Ed. 246. Problems of Teaching Social Studies in Elementary Schools (2).

Application to the social studies program of selected theory and research in the social sciences, emphasizing patterns of behavior, environmental influences, and critical thinking. (O'Neill.)

Ed. 247. Seminar in Science Education (2).

An opportunity to pursue special problems in curriculum making, course of study de-

velopment, or other science teaching problems. Class members may work on problems relate ddirectly to their own school situations. (Blough.)

Ed. 248. Seminar in Industrial Arts and Vocational Education (2).

(See Ind. Ed. 248.)

(Brown, Hornbake.)

Ed. 250. Analysis of the Individual (3).

Knowing students through use of numerous techniques. Ed. 161 desirable as prerequisite. (Byrne.)

Ed. 253. Guidance Information (2).

Finding, filing, and using information needed by students for making choices, plans, and adaptations in school, occupations, and in inter-personal relations. Ed. 161 desirable as prerequisite. (Byrne.)

Ed. 254. Organization and Administration of Guidance Programs (2).

Instilling the guidance point of view and implementing guidance practices. All guidance courses except Seminar are prerequisites.

Ed. 260. School Counseling: Theoretical Foundations and Practice (3).

Prerequisites, Ed. 161, 250, 253. Prerequisites may be waived by instructor. Exploration of learning theories as applied to counseling in schools, and practices which stem from such theories. (Byrne.)

Ed. 261. Practicum in School Counseling (2).

Prerequisite, Ed. 260. Limited to 15 applicants in advance, who will have one or more pupils available for counseling. (Byrne.)

Ed. 263, 264. Aptitudes and Aptitude Testing (2, 2).

(Offered in Baltimore.)

Ed. 267. Curriculum Construction Through Community Analysis (2).

Prerequisites, Ed. 163, 164, 165. Selected research problems in the field of community study with emphasis on Baltimore area. (Schindler.)

Ed. 268. Seminar in Educational Sociology (2).

Ed. 269. Seminar in Guidance (2).

Registration only by approval of instructor. Final guidance course. Students study research and conduct one. (Byrne.)

Ed. 278. Seminar in Special Education (2).

An overview of education of exceptional children.

(Denecke.)

Ed. 279. Seminar in Adult Education (2).

(Wiggin.)

Ed. 280. Research Methods and Materials (2).

Research methodology for case studies, surveys, and experiments; measurement and statistical techniques; design, form, and style for theses and research reports. Primarily for advanced students and doctoral candidates.

Ed. 281. Source Materials in Education (2).

Bibliography development through a study of source materials in education, special fields in education, and for seminar papers and theses.

Ed. 287. Internship in Education (12-16).

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| a. Curriculum and Instruction | d. Industrial Arts Education |
| b. Educational Administration | e. Supervision |
| c. Guidance and Personnel | f. Vocational Industrial Education |

Internships in the major area of study are available to selected students who have teaching experience. The following groups of students are eligible: (a) any student who has been advanced to candidacy for the doctor's degree; and (b) any student who receives special approval by the Education faculty for an internship, provided that prior to taking an internship, such student shall have completed at least sixty semester hours of graduate work, including at least six semester hours in Education at the University of Maryland. Each intern is assigned to work on a full-time basis for at least a semester with an appropriate staff member in a cooperating school, school system, or educational institution or agency. The internship must be taken in a school situation different from the one where the student is regularly employed. The intern's sponsor maintains a close working relationship with the intern and the other persons involved.

NOTE: The total number of credits which a student might earn in Ed. 187, Ed. 224 and Ed. 287 is limited to a maximum of twenty (20) semester hours.

Ed. 288. Special Problems in Education (1-6).

First and second semesters and summer session. Master of education or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for credit under this number. (Staff.)

NOTE: Course card must have the title of the problem and the name of the faculty member under whom the work will be done.

Ed. 289. Research—Thesis (1-6).

First and second semesters and summer session. Students who desire credit for a master's thesis, a doctoral dissertation, or a doctoral project should use this number. (Staff.)

Ed. 290. Doctoral Seminar (1-3).

Prerequisite: Passing the preliminary examinations for a doctor's degree in Education, or recommendation of a doctoral adviser. Analysis of doctoral projects and theses, and of other on-going research projects. A doctoral candidate may participate in the Seminar during as many University sessions as he desires, but may earn no more than three semester hours of credit in the Seminar. An Ed.D. candidate may earn in total no more than nine semester hours, and a Ph.D. candidate, no more than eighteen semester hours, in the Seminar and in Ed. 289.

BUSINESS EDUCATION**For Advanced Undergraduates and Graduates****B. Ed. 100. Techniques of Teaching Office Skills (3).**

First semester. An examination and evaluation of the aims, methods, and course contents of each of the office skill subjects offered in the high school curriculum.

(Patrick.)

B. Ed. 101. Problems in Teaching Office Skills (2).

Problems in development of occupational competency, achievement tests, standards of achievement, instructional materials, transcription, and the integration of office skills.

(Patrick.)

B. Ed. 102. Methods and Materials in Teaching Bookkeeping and Related Subjects (2).

Important problems and procedures in the mastery of bookkeeping and related office knowledges and skills including a consideration of materials and teaching procedures.

(Patrick.)

B. Ed. 104. Basic Business Education in the Secondary Schools (2).

Includes consideration of course objectives; subject matter selection; and methods of organizing and presenting business principles, knowledges, and practices.

(Patrick.)

B. Ed. 200. Administration and Supervision of Business Education (2).

Major emphasis on departmental organization, curriculum, equipment, budget making, guidance, placement and follow-up, visual aids and the in-service training of teachers. For administrators, supervisors, and teachers of business subjects.

B. Ed. 255. Principles and Problems of Business Education (2).

Principles and practices in business education; growth and present status; vocational business education; general business education; relation to consumer education and to education in general.

(Patrick.)

B. Ed. 256. Curriculum Development in Business Education (2-6).

This course is especially designed for graduate students interested in devoting the summer session to a concentrated study of curriculum planning in business education. Emphasis will be placed on the philosophy and objectives of the business education program, and on curriculum research and organization of appropriate course content.

CHILDHOOD EDUCATION**C. Ed. 2. Orientation, Observation, and Record Taking (2).**

First and second semesters. Orientation to nursery school and kindergarten; methods of observing and recording behavior of children at different age levels.

(McNaughton.)

For Advanced Undergraduates and Graduates

C. Ed. 100. Child Development I—Infancy (3).

First semester. Understanding the pattern of growth. Factors influencing development; relation of care during the first eighteen months to personality development; study of a child fourteen months of age or under. (Broome.)

C. Ed. 101. Child Development II—Early Childhood (3).

Second semester. Developmental growth of the child from eighteen months to five years; experiences which help the child in his development; observation in the nursery school; study of one child. (Broome.)

C. Ed. 110. Child Development III (3).

First and second semesters. Developmental growth of the child from birth to five years; observation in the nursery school. For students in other colleges of the University. Laboratory fee, \$1.00. (Broome.)

C. Ed. 115. Children's Activities and Activities Materials (3).

First and second semesters. Prerequisites, C. Ed. 100, 101, or 110. Laboratory fee, \$5.00. Storytelling; selection of books for pre-school children; the use, preparation, and presentation of such raw materials as clay, paints (easel and finger), blocks, wood, and scrap materials for nursery school and kindergarten.

C. Ed. 116. Creative Music for Young Children (2-3).

Prerequisite, Mus. 16 or equivalent. First and second semesters. Creative experience in songs and rhythms; correlation of music and everyday teaching with the abilities and development of each level; study of songs and materials; observation and teaching experience with each age level. (Brown.)

C. Ed. 119. Curriculum, Instruction, and Observation—Cooperative Nursery School (2-3).

C. Ed. 140. Curriculum, Instruction, and Observation—Early Childhood Education (Nursery School and Kindergarten) (3).

Prerequisites, C. Ed. 100, 101, or 110. Philosophy of early childhood education; observation of the developmental needs at various age levels, with emphasis upon the activities, materials, and methods by which educational objectives are attained. (Stant and Glass.)

C. Ed. 145. Guidance in Behavior Problems (3).

First and second semesters. Development of an appreciation and understanding of young children from different home and community backgrounds; study of individual and group problems. (Glass.)

C. Ed. 149. Teaching Nursery School (4-8).

First and second semesters. Laboratory fee, \$30.00. Admission to student teaching depends upon physical and emotional fitness, and upon approval of the staff of the department. An academic average of 2.275 is required. It is recommended that such student

have some summer experience with young children. Teaching experience in the University Nursery School and in those of nearby communities. Approximately thirty clock-hours of school experience are required for each semester-hour of credit. (Glass.)

C. Ed. 159. Teaching Kindergarten (4-8).

First and second semesters. Laboratory fee, \$30.00. Admission to student teaching (in Nursery School and Kindergarten) depends upon approval of the teaching staff of the department. An academic average of 2.275 is required. It is recommended that each student have some summer experience with young children. Teaching experience in the University kindergarten and in those of nearby communities. (Stant.)

C. Ed. 160. Methods and Materials in Parent Education (2-3).

A survey of child development, child guidance, and related fields; a review of current materials, books, periodicals, leaflets, films, skits; study of individual parent conferences, guided observation, discussion leading, role playing, preparing materials and programs for parent groups and television skits with laboratory practice through the group itself. (Taylor.)

HOME ECONOMICS EDUCATION

For Advanced Undergraduates and Graduates

H. E. Ed. 102. Problems in Teaching Home Economics (3).

First and second semesters. Required of seniors in Home Economics Education. Prerequisite, H. E. Ed. 140. A study of the managerial aspects of teaching and administering a home-making program; the physical environment, organization, and sequence of instructional units, resource materials, evaluation, home projects. (Spencer.)

H. E. Ed. 120. Evaluation of Home Economics (3).

The meaning and function of evaluation in education; the development of a plan for evaluating a homemaking program with emphasis upon types of evaluation devices, their construction, and use. (Spencer.)

H. E. Ed. 140. Curriculum, Instruction, and Observation (3).

Required of juniors in Home Economics Education. The place and function of home economics education in the secondary school curriculum. Philosophy of education for home and family living; characteristics of adolescence, construction of source units, lesson plans, and evaluation devices; directed observation in junior and senior high school home economics departments. (Spencer.)

H. E. Ed. 148. Teaching Secondary Vocational Home Economics (8).

First and second semesters. Prerequisite, H. E. Ed. 140 and 102 parallel. See Ed. 148. Laboratory fee, \$30.00. Observation and supervised teaching in approved secondary school home economics departments in Maryland and the District of Columbia. (Spencer.)

H. E. Ed. 200. Seminar in Home Economics Education (2).

First semester and Summer School.

(Spencer.)

H. E. Ed. 202. Trends in the Teaching and Supervision of Home Economics (2-4).

Study of home economics programs and practices in light of current educational trends. Interpretation and analysis of democratic teaching procedures, outcomes of instruction, and supervisory practices. (Spencer.)

HUMAN DEVELOPMENT EDUCATION

The staff of the Institute for Child Study offers a series of courses on human development and approaches to the direct study of children for members of the educational profession. Certain prerequisites are set up within the course sequences, but these prerequisites are modified by the student's previous experience in direct study of children; this is done in order to provide an interrelated series of experiences leading toward synthesis and the ability to apply the principles of human development and behavior.

Undergraduate courses are designed both for prospective teachers (H. D. Ed. 100-101) and in-service teachers (H. D. Ed. 102, 103, 104; H. D. Ed. 112-13, 114-15, 116-17.) The graduate offering contains two series. H. D. Ed. 200, 201, 202, 203 provide a basic core of four seminars for students majoring in the field, and also provide electives (beginning with H. D. Ed. 200—Introduction) for any graduate students interested in an overview of the field. The other seminars (H. D. Ed. 204 and above) are designed for emphasis in depth on the various areas of major processes and forces that shape the development and behavior of human beings, and are intended primarily for advanced graduate students. Along with most of the graduate seminars, H. D. Ed. 250 provides for concurrent application of scientific knowledge to the direct study of children as individuals and in groups.

H. D. Ed. 100, 101. Principles of Human Development I and II (3, 3).

These courses give a general overview of the scientific principles that describe human development and behavior and relate these principles to the task of the school. A year-long study of an individual child is an integral part of the course and will require one half-day per week for observing children in nearby schools. *This course is designed to meet the usual certification requirements in Educational Psychology.* H. D. 100 is prerequisite to H. D. Ed. 101.

H. D. Ed. 102, 103, 104. Child Development Laboratory I, II and III (2, 2, 2).

These courses involve the direct study of children throughout the school year. Each participant gathers a wide body of information about an individual, presents the accumulating data from time to time to the study group for criticism and group analysis, and writes an interpretation of the dynamics underlying the child's learning, behavior and development. Provides opportunity for teachers in-service to earn credit for participation in their own local child study group.

H. D. Ed. 112, 114, 116. Scientific Concepts in Human Development I, II, III (3, 3, 3).

Summer.

H. D. Ed. 113, 115, 117. Laboratory in Behavior Analysis I, II, III (3, 3).

Summer.

H. D. Ed. 200. Introduction to Human Development and Child Study (3).

Offers a general overview of the scientific principles which describe human development and behavior and makes use of these principles in the study of individual children. Each student will observe and record the behavior of an individual child throughout the semester and must have one half-day a week free for this purpose. It is basic to further work in child study and serves as a prerequisite for advanced courses where the student has not had field work or at least six weeks of workshop experience in child study. When offered during the summer it will be H. D. Ed. 200 and intensive laboratory work with case records may be substituted for the study of an individual child.

H. D. Ed. 201 Biological Bases of Behavior (3).

Emphasizes that understanding human life, growth and behavior depends on understanding the ways in which the body is able to capture, control and expend energy. Application throughout is made to human body processes and implications for understanding and working with people. H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before H. D. Ed. 201 or concurrently.

H. D. Ed. 202. Social Bases of Behavior (3).

Analyzes the socially inherited and transmitted patterns of pressures, expectations and limitations learned by an individual as he grows up. These are considered in relation to the patterns of feeling and behaving which emerge as the result of growing up in one's social group. H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before H. D. Ed. 202 or concurrently.

H. D. Ed. 203. Integrative Bases of Behavior (3).

Analyzes the organized and integrated patterns of feeling, thinking and behaving which emerge from the interaction of basic biological drives and potentials with one's unique experience growing up in a social group. H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent, H. D. Ed. 201 and H. D. Ed. 202 are prerequisite.

H. D. Ed. 204, 205. Physical Processes in Human Development (3, 3).

Describes in some detail the major organic processes of: conception, biological inheritance; differentiation and growth of the body; capture, transportation and use of energy; perception of the environment; coordination and integration of function; adaptation to unusual demands and to frustration; normal individual variation in each of the above processes. H. D. Ed. 250 a or b or c must be taken concurrently with this course.

H. D. Ed. 206, 207. Socialization Processes in Human Development I, II (3, 3).

Analyzes the processes by which human beings internalize the culture of the society in which they live. The major sub-cultures in the United States, their training procedures, and their characteristic human expressions in folk-knowledge, habits, attitudes, values, life-goals, and adjustment patterns are analyzed. Other cultures are examined

to highlight the American way of life and to reveal its strengths and weakness. H. D. Ed. 250 a or b or c must be taken concurrently with this course.

H. D. Ed. 208, 209. Self Processes in Human Development I and II (3,3).

Analyzes the effects of the various physical and growth processes, affectional relationships, socialization processes, and peer group roles and status on the integration, development, adjustment, and realization of the individual self. This analysis includes consideration of the nature of intelligence and of the learning process; the development of skills, concepts, generalizations, symbolizations, reasoning and imagination, attitudes, values, goals and purposes; and the conditions, relationships and experiences that are essential to full human development. The more common adjustment problems experienced in our society at various maturity levels, and the adjustment mechanisms used to meet them are studied. H. D. Ed. 250 a or b or c must be taken concurrently with this course.

H. D. Ed. 210. Affectional Relationships and Processes in Human Development (3).

Describes the normal development, expression and influence of love in infancy, childhood, adolescence and adulthood. It deals with the influence of parent-child relationship involving normal acceptance, neglect, rejection, inconsistency, and over-protection upon health, learning, emotional behavior and personality adjustment and development. H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before or concurrently.

H. D. Ed. 211. Peer-culture and Group Processes in Human Development (3).

Analyzes the processes of group formation, role-taking and status-winning. It describes the emergence of the "peer-culture" during childhood and the evolution of the child society at different maturity levels to adulthood. It analyzes the developmental tasks and adjustment problems associated with winning, belonging and playing roles in the peer group. H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before or concurrently.

H. D. Ed. 212, 214, 216. Advanced Scientific Concepts in Human Development I, II, III (3, 3, 3).

Summer.

H. D. Ed. 213, 215, 217. Advanced Laboratory in Behavior Analysis I, II, III (3, 3, 3).

Summer.

H. D. Ed. 218. Workshop in Human Development (6).

Prerequisites, H. D. Ed. 212, 213, 214, 215, 216, 217. Summer.

H. D. Ed. 220. Developmental Tasks (3).

Describes the series of developmental tasks faced by children. These tasks, made necessary by the normal processes of growth and development, are learnings that the child needs and desires to accomplish because of emerging capacities for action and relationship, because of the demands and expectancies of his family and of society, and

because of the progressive clarification and the directive powers of his own interests, attitudes, values and aspirations. Emphasis will be placed on the use of developmental tasks concepts in educational planning and practice. H. D. Ed. 200 or its equivalent, H. D. Ed. 201, and H. D. Ed. 202 are prerequisites.

H. D. Ed. 230, 231. Field Program in Child Study I and II (2-6).

Offers apprenticeship training preparing properly qualified persons to become staff members in human development workshops, consultants to child study field programs and coordinators of municipal or regional child study programs for teachers or parents. Extensive field experience is provided. In general this training is open only to persons who have passed their preliminary examinations for the doctorate with a major in human development or psychology. Prerequisite, consent of instructor.

H. D. Ed. 250a, 250b, 250c. Direct Study of Children (1, 1, 1).

Provides the opportunity to observe and record the behavior of an individual child in a nearby school. These records will be used in conjunction with the advanced courses in Human Development and this course will be taken concurrently with such courses. Teachers active in their jobs while taking advanced courses in Human Development may use records from their own classrooms for this course. May not be taken concurrently with H. D. Ed. 102, 103, or 104.

H. D. Ed. 260. Synthesis of Human Development Concepts (3).

A seminar wherein advanced students work toward a personal synthesis of their own concepts in human growth and development. Emphasis is placed on seeing the dynamic interrelations between all processes in the behavior and development of an individual. Prerequisites, H. D. Ed. 204, 206 and 208.

H. D. Ed. 270. Seminars in Special Topics in Human Development (2-6).

An opportunity for advanced students to focus in depth on topics of special interest growing out of their basic courses in human development. Prerequisite, consent of the instructor.

INDUSTRIAL EDUCATION

Ind. Ed. 1. Mechanical Drawing (2).

Two laboratory periods a week. This course constitutes an introduction to orthographic multi-view and isometric projection. Emphasis is placed upon the visualization of an object when it is represented by a multi-view drawing and upon the making of multi-view drawings. The course carries through auxiliary views, sectional views, dimensioning, conventional representation and single stroke letters. Laboratory fee, \$5.00.

Ind. Ed. 2. Elementary Woodworking (2).

Two laboratory periods a week. This is a woodworking course which involves primarily the use of hand tools. The course is developed so that the student uses practically every common woodworking hand tool in one or more situations. There is also included elementary wood finishing, the specifying and storing of lumber, and the care and conditioning of tools used. Laboratory fee, \$5.00.

Ind. Ed. 9. Industrial Arts in the Elementary School I (2).

A course for pre-service and in-service elementary school teachers covering construction activities in a variety of media suitable for classroom use. The work is organized

on the unit basis so that the construction aspect is supplemented by reading and other investigative procedures. Laboratory fee, \$5.00.

Ind. Ed. 10. Industrial Arts in the Elementary School II (2).

Prerequisite, Ind. Ed. 9. This is a continuation of Ind. Ed. 9. It provides the teacher with opportunities to develop further competence in construction activities. Some of the basic phenomena of industry are studied, particularly those which apply to the manufacture of common products, housing, transportation and communication. Laboratory fee, \$5.00.

Ind. Ed. 12. Shop Calculations (3).

Shop Calculations is designed to develop an understanding and working knowledge of the mathematical concepts related to the various aspects of Industrial Education. The course includes phases of algebra, geometry, trigonometry, and general mathematics as applied to shop and drawing activities.

Ind. Ed. 21. Mechanical Drawing (2).

Two laboratory periods a week. Prerequisite, Ind. Ed. 1. A course dealing with working drawings, machine design, pattern layouts, tracing and reproduction. Detail drawings followed by assemblies are presented. Laboratory fee, \$5.00.

Ind. Ed. 22. Machine Woodworking I (2).

Two laboratory periods a week. Prerequisite, Ind. Ed. 2. Machine Woodworking I offers initial instruction in the proper operation of the jointer, band saw, variety saw, jig saw, mortiser, shaper, and lathe. The types of jobs which may be performed on each machine and their safe operation are of primary concern. Laboratory fee, \$5.00.

Ind. Ed. 23. Arc and Gas Welding (1).

One laboratory period a week. A course designed to develop a functional knowledge of the principles and use of electric and acetylene welding. Practical work is carried on in the construction of various projects using welded joints. Instruction is given in the use and care of equipment, types of welded joints, methods of welding, importance of welding processes in industry, safety considerations, etc. Laboratory fee, \$5. 00.

Ind. Ed. 24. Sheet Metal Work (2).

Two laboratory periods a week. Articles are made from metal in its sheet form and involve the operations of cutting, shipping, soldering, riveting, wiring, folding, seaming, beading, burring, etc. The student is required to develop his own patterns inclusive of parallel line development, radial line development, and triangulation. Laboratory fee, \$5.00.

Ind. Ed. 26. General Metal Work (3).

Three, two-hour laboratory periods a week. This course provides experiences in constructing items from aluminum, brass, copper, pewter and steel. The processes included are designing, lay out, heat treating, forming, surface decorating, fastening and assembling. The course also includes a study of the aluminum, copper and steel industries in terms of their basic manufacturing processes. Laboratory fee, \$7.50.

Ind. Ed. 28. Electricity I (2).

Two laboratory periods a week. An introductory course to electricity in general. It deals with the electrical circuit, elementary wiring problems, the measurement of electrical energy, and a brief treatment of radio. Laboratory fee, \$5.00.

Ind. Ed. 31. Mechanical Drawing (2).

Two laboratory periods a week. Prerequisites, Ind. Ed. 1 and 21. A course dealing with the topics enumerated in Ind. Ed. 21 but on a more advanced basis. The reading of prints representative of a variety of industries is a part of this course. Laboratory fee, \$5.00.

Ind. Ed. 33. Automotives I (3).

Three, two-hour laboratory periods a week. Automotives I is a study of the fundamentals of internal combustion engines as applied to transportation. A study of basic materials and methods used in the automotive industry is included. Shop practices are built around the maintenance and minor repair of automobiles and smaller motor driven apparatus. Laboratory fee, \$7.50.

Ind. Ed. 34. Graphic Arts I (3).

Three, two-hour laboratory periods a week. An introductory course involving experiences in letterpress and offset printing practices. This course includes typographical design, hand composition, proof reading, stock preparation, offset plate making, imposition, lock-up, stock preparation, presswork, linoleum block cutting, paper marbelizing, and bookbinding. Laboratory fee, \$7.50.

Ind. Ed. 41. Architectural Drawing (2).

Two laboratory periods a week. Prerequisite, Ind. Ed. 1, or equivalent. Practical experience is provided in the design and planning of houses and other buildings. Working drawings, specifications and blue-prints are featured. Laboratory fee, \$5.00.

Ind. Ed. 42. Machine Woodworking II (2).

Two laboratory periods a week. Prerequisite, Ind. Ed. 22, or equivalent. Advanced production methods with emphasis on cabinetmaking and design. Laboratory fee, \$5.00.

Ind. Ed. 43. Automotives II (3).

Three, two-hour laboratory periods a week. Prerequisite, Ind. Ed. 33. This is an advanced course in automobile construction and maintenance covering the engine, fuel system, ignition system, chassis and power train. Shop practices are built around the major repair and adjustment of the above groups. Laboratory fee, \$7.50.

Ind. Ed. 44. Graphic Arts II (3).

Three, two-hour laboratory periods a week. Prerequisite, Ind. Ed. 34. An advanced course designed to provide further experiences in letterpress and offset printing and to introduce other reproduction processes. Silk screen printing, dry point etching, mimeograph reproduction, and rubber stamp making are the new processes introduced in this course. Laboratory fee, \$7.50.

Ind. Ed. 48. Electricity II (2).

Two laboratory periods a week. Principles involved in A-C and D-C electrical equipment, including heating measurements, motors and controls, electro-chemistry, the electric arc, inductance and reactance, condensers, radio, and electronics. Laboratory fee, \$5.00.

Ind. Ed. 50. Methods of Teaching (2).

(Offered at CSCS Centers.) For vocational and occupational teachers of shop work and related subjects. The identification and analysis of factors essential to helping others learn; types of teaching situations and techniques; measuring results and grading student progress in shop and related technical subjects.

Ind. Ed. 60. Observation and Demonstration Teaching (2).

(Offered in Baltimore.) Prerequisite, Educational Psychology and/or Methods of Teaching Vocational and Occupational Subjects. Primarily for vocational and occupational teachers. Sixteen hours of directed observation and demonstration teaching. Reports, conferences, and criticisms constitute the remainder of scheduled activities in this course.

Ind. Ed. 66. Art Metal Work (2).

Two laboratory periods a week. Prerequisite, Ind. Ed. 26, or equivalent. Advanced practicum. It includes methods of bowl raising and bowl ornamenting. Laboratory fee, \$5.00.

Ind. Ed. 69. Machine Shop Practice I (3).

Two three-hour laboratory periods a week. Prerequisite, Ind. Ed. 1 or equivalent. Bench work, turning, planing, milling, and drilling. Related technical information. Laboratory fee, \$5.00.

Ind. Ed. 89. Machine Shop Practice II (2).

Two laboratory periods a week. Prerequisite, Ind. Ed. 69, or equivalent. Advanced shop practicum in thread cutting, grinding, boring, reaming, and gear cutting. Work-production methods are employed. Laboratory fee, \$5.00.

Ind. Ed. 94. Shop Maintenance (2).

Prerequisite, 8 semester hours of shop credit, or equivalent. Skill developing practice in the maintenance of school-shop facilities.

Ind. Ed. 101. Operational Drawing (2).

Two laboratory periods a week. Prerequisite, Ind. Ed. 1, or equivalent. A comprehensive course designed to give students practice in the modern drafting methods of industry. Laboratory fee, \$5.00.

Ind. Ed. 102. Advanced Woodfinishing and Upholstery (2).

Two laboratory periods a week. Prerequisite, Ind. Ed. 22, or equivalent. This course offers instruction in wood finishing techniques applicable to furniture restoration and in the processes of upholstering furniture. Laboratory fee, \$5.00.

Ind. Ed. 104. Advanced Practices in Sheet Metal Work (2).

Two laboratory periods a week. Prerequisite, Ind. Ed. 24, or equivalent. Study of the more complicated processes involved in commercial items. Calculations and pattern making are emphasized. Laboratory fee, \$5.00.

Ind. Ed. 105. General Shop (2).

Designed to meet needs in organizing and administering a secondary school general shop. Students are rotated through skill and knowledge developing activities in a variety of shop areas. Laboratory fee, \$5.00.

Ind. Ed. 106. Art Metal Work (2).

Two laboratory periods a week. Basic operations in the art of making jewelry including ring making and stone setting. Laboratory fee, \$5.00.

Ind. Ed. 108. Electricity III (2).

Two laboratory periods a week. Prerequisite, Ind. Ed. 28, or equivalent. Experimental development of apparatus and equipment for teaching the principles of electricity. Laboratory fee, \$5.00.

Ind. Ed. 109. Experimental Electricity and Electronics—A, B, C, D (2, 2, 2, 2).

(Offered in Baltimore.)

Ind. Ed. 110. Foundry (1).

One laboratory period a week. Bench and floor molding and elementary core making. Theory and principles covering foundry materials, tools and appliances. Laboratory fee, \$5.00.

Ind. Ed. 111. Laboratory Practicum in Industrial Arts Education (3).

Three, two-hour laboratory periods a week. Prerequisite, eighteen semester hours of shopwork and drawing. A course devoted to the development of instructional materials and the refinement of instructional methods pertinent to the teaching of industrial arts at the secondary school level. Laboratory fee, \$7.50.

Ind. Ed. 124 a, b. Organized and Supervised Work Experience.

(3 credits for each internship period, total: 6 credits). This is a work experience sequence planned for students enrolled in the curriculum, "Education for Industry." The purpose is to provide the students with opportunities for first-hand experiences with business and industry. The student is responsible for obtaining his own employment with the coordinator advising him as regards the job opportunities which have optimum learning value. The nature of the work experience desired is outlined at the outset of employment and the evaluations made by the student and the coordinator are based upon the planned experiences. The time basis for each internship period is 6 forty-hour weeks of 240 work hours. Any one period of internship must be served through continuous employment in a single establishment. Two internship periods are required. The two internships may be served with the same business or industry. The completion for credit of any period of internship requires the employer's recommendation in terms of satisfactory work and work attitudes. More complete details are found in the handbook prepared for the student of this curriculum.

Ind. Ed. 140 (Ed. 140.) Curriculum, Instruction, and Observation (3).

Major functions and specific contributions of Industrial Art Education; its relation to the general objectives of the junior and senior high schools; selection and organization of subject matter in terms of modern practices and needs; methods of instruction; expected outcomes; measuring results; professional standards. Twenty periods of observation.

Ind. Ed. 143. Industrial Safety Education I (2).

This course deals briefly with the history and development of effective safety programs in modern industry and treats causes, effects, and values of industrial safety education inclusive of fire prevention and hazard controls.

Ind. Ed. 144. Industrial Safety Education II (2).

In this course exemplary safety practices are studied through conference discussions, group demonstrations, and organized plant visits to selected industrial situations. Methods of fire precautions and safety practices are emphasized. Evaluative criteria in safety programs are formulated.

Ind. Ed. 148. Student Teaching in Secondary Schools (2-8).

First and second semesters. See Ed. 148. Laboratory fee, \$30.

Ind. Ed. 150. Training Aids Development (3).

Study of the aids in common use as to their source and application. Special emphasis is placed on principles to be observed in making aids useful to shop teachers. Actual construction and application of such devices will be required.

Ind. Ed. 157. Tests and Measurements (2).

Prerequisite, Ed. 150 or consent of instructor. The construction of objective tests for occupational and vocational subjects.

Ind. Ed. 160. Essentials of Design (2).

Two laboratory periods a week. Prerequisites, Ind. Ed. 1 and basic shop work. A study of the basic principles of design and practice in their application to the construction of shop projects. Laboratory fee, \$5.00.

Ind. Ed. 161. Principles of Vocational Guidance (2).

This course identifies and applies the underlying principles of guidance to the problems of educational and vocational adjustment of students.

Ind. Ed. 164. Shop Organization and Management (2).

This course covers the basic elements of organizing and managing an Industrial Education program including the selection of equipment and the arrangement of the shop.

Ind. Ed. 165. Modern Industry (2).

This course provides an overview of manufacturing industry in the American social, economic, and culture pattern. Representative basic industries are studied from the

viewpoints of personnel and management organization, industrial relations, production procedures, distribution of products, and the like.

Ind. Ed. 166. Educational Foundations of Industrial Arts (2).

A study of the factors which place Industrial Arts education in any well-rounded program of general education.

Ind. Ed. 167. Problems in Occupational Education (2).

The purpose of this course is to secure, assemble, organize, and interpret data relative to the scope, character and effectiveness of occupational education.

Ind. Ed. 168. Trade or Occupational Analysis (2).

Provides a working knowledge of occupational and job analysis which is basic in organizing vocational-industrial courses of study. This course should precede Ind. Ed. 169.

Ind. Ed. 169. Course Construction (2).

Surveys and applies techniques of building and reorganizing courses of study for effective use in vocational and occupational schools.

Ind. Ed. 170. Principles of Vocational Education (2).

The course develops the Vocational Education movement as an integral phase of the American program of public education.

Ind. Ed. 171. History of Vocational Education (2).

An overview of the development of Vocational Education from primitive times to the present.

For Graduates

Ind. Ed. 207. Philosophy of Industrial Arts Education (3).

This course is intended to assist the student in his development of a point of view as regards Industrial Arts and its relationship with the total educational program. He should, thereby, have a "yardstick" for appraising current procedures and proposals and an articulateness for his own professional area.

Ind. Ed. 214. School Shop Planning and Equipment Selection (3).

This course deals with principles involved in planning a school shop and provides opportunities for applying these principles. Facilities required in the operation of a satisfactory shop program are catalogued and appraised.

Ind. Ed. 216. Supervision of Industrial Arts (2).

Ind. Ed. 220. Organization, Administration and Supervision of Vocational Education (2).

This course surveys objectively the organization, administration, supervision, curricular spread and viewpoint, and the present status of vocational education.

Ind. Ed. 240. Research in Industrial Arts and Vocational Education (2).

This is a course offered by arrangement for persons who are conducting research in the areas of Industrial Arts and Vocational Education.

Ind. Ed. 241. Content and Method of Industrial Arts (3).

Various methods and procedures used in curriculum development are examined and those suited to the field of Industrial Arts education are applied. Methods of and devices for Industrial Arts instruction are studied and practiced.

Ind. Ed. 248. Seminar in Industrial Arts and Vocational Education (2).**MUSIC EDUCATION****For Advanced Undergraduates and Graduates****Mus. Ed. 125. Creative Activities in the Elementary School (2).**

Prerequisite, Music 16 or consent of instructor. A study of the creative approach to singing, listening, playing, rhythmic activity, and composition. These topics are studied in correlation with other areas and creative programs. (Kemble.)

Mus. Ed. 128. Music for the Elementary Classroom Teacher (2).

Prerequisite, Music 16 or consent of instructor. A study of the group activities and materials through which the child experiences music. The course is designed to aid both music specialists and classroom teachers. It includes an outline of objectives and a survey of instructional methods. (Kemble.)

Mus. Ed. 132. Music in the Secondary School (2).

Prerequisite, consent of instructor. A study of the vocal and instrumental programs in the secondary schools. A survey of the needs in general music and the relationship of music to the core curriculum. (Kemble.)

Mus. Ed. 139. Music for the Elementary School Specialist (2-3).

First semester. Prerequisite, senior standing. A survey of instructional materials; objectives; organization of subject matter; lesson planning; methods and procedures in singing, listening, rhythms, simple instruments, and creative activities for the music specialist in the elementary school. Twenty periods of observation will be required for three credits.

Mus. Ed. 155. Organization and Technique of Instrumental Class Instruction (2).

Prerequisite, consent of instructor. Practical instruction in the methods of tone production, tuning, fingering, and in the care of woodwind and brass instruments. A survey of the materials and published methods for class instruction. (Henderson.)

Mus. Ed. 170. Methods and Materials for Class Piano Instruction (2).

The study of the principles and techniques of teaching class piano. The following groups, beginning and advanced, will be used for demonstrations: elementary school children, junior and senior high school students, adults. Special emphasis will be placed on the analysis of materials.

Mus. Ed. 171. String Teaching in the Public Schools (2).

A study of the problems of organizing and developing the string program in the public schools. Emphasis is placed on exploratory work in string instruments, on the study of teaching techniques, and on the analysis of music literature for solo, small ensembles, and orchestra.

Mus. Ed. 175. Methods and Materials in Vocal Music for the High School (2).

Prerequisite, consent of instructor. A survey of suitable vocal and choral repertoire for the high school. Problems of diction, interpretation, tone production, and phrasing. The course is designed primarily for choral directors and teachers of voice classes.
(Grentzer.)

Mus. Ed. 180. Instrumental Seminar (2).

Prerequisite, consent of instructor. Problems in the music directing of public-school instrumental organizations. A study of representative orchestral, band, and small-ensemble scores, and of the teaching problems involved.
(Jordan.)

For Graduates**Mus. Ed. 200. Research Methods in Music and Music Education (3).**

The application of methods of research to problems in the fields of music and music education. The preparation of bibliographies and the written exposition of research projects in the area of the student's major interest.
(Grentzer.)

Mus. Ed. 201. Administration and Supervision of Music in the Public Schools (3).

The study of basic principles and practices of supervision and administration with emphasis on curriculum construction, scheduling, budgets, directing of in-service teaching, personnel problems, and school-community relationships.

Mus. Ed. 204. Current Trends in Music Education (Seminar) (2).

A survey of current philosophies and objectives of music in the schools. The scope and sequence of the music curricula, vocal and instrumental, on the elementary and secondary levels.
(Grentzer.)

Mus. Ed. 205. Seminar in Vocal Music in the Elementary Schools (2).

A comparative analysis of current methods and materials used in the elementary schools. A study of the music curriculum as a part of the total school program, and of the roles of the classroom teacher and the music specialist.

Mus. Ed. 206. Choral Conducting and Repertoire (2).

The study and reading of choral literature of all periods, including the contemporary, suitable for use in school and community choruses. Style, interpretation, tone quality, diction, rehearsal and conducting techniques are analyzed.

Mus. Ed. 207. Seminar in Vocal Music in the Secondary Schools (2).

A comparative analysis of current methods and materials used in teaching junior and senior high-school classes in general music, history and appreciation, theory, and voice; and in directing choral groups and community singing.

Mus. Ed. 208. The Teaching of Music Appreciation (2).

A study of the objectives for the elementary and secondary levels; the techniques of directed listening, the presentation of theoretical and biographical materials, course planning, selection and use of audio-visual aids, and library materials, and the correlation between music and the other arts.

Mus. Ed. 209. Seminar in Instrumental Music (2).

A consideration of acoustical properties and basic techniques of the instruments. Problems of ensemble and balance, intonation, precision, and interpretation are studied. Materials and musical literature for orchestras, bands, and small ensembles are evaluated.

Mus. Ed. 210. Advanced Orchestration and Band Arranging (2). Seminar

A study of arranging and transcription procedures in scoring for the orchestra and band. Special attention is given to the arranging problems of the instrumental director in the public schools. Prerequisite, Music 147 or the equivalent, or consent of the instructor.

SCIENCE EDUCATION

***Sci. Ed. 6: The Natural Sciences in the Elementary School (2).**

Laboratory fee, \$2.00. Selecting, organizing, and teaching materials in the plant and animal world. For the elementary school teacher who needs help in identifying and making effective use of living materials brought to the classroom, assisting pupils to find answers to their questions, and planning other worthwhile science experiences. Extensive background in the subject matter of the biological sciences not required. (Blough.)

***Sci. Ed. 7. The Physical Sciences in the Elementary School (2).**

Laboratory fee, \$2.00. Similar to the previous course except that problems for study are selected from the various fields of the physical sciences such as electricity and magnetism, weather, heat, light, sound, etc. Non-technical, comprehensive treatment intended to give background in subject matter and methods to equip teachers for elementary school science teaching. (Blough.)

Sci. Ed. 105. Workshop in Science for Elementary Schools (2).

Designed to help teachers acquire general science understandings and to develop teaching materials for practical use in classrooms. Includes experiments, demonstrations, constructions, observations, field trips, and use of audio-visual materials. The emphasis

*Students who have received four credits in Sci. Ed. 1, 2, 3 and 4 should not register for these courses.

Note: Sci. Ed. 6 and 7 replace Sci. Ed. 1, 2, 3, 4. Laboratory fees have been combined, making \$2.00 for each of the two courses instead of \$1.00 for each of the four courses.

is on content and method related to science units in common use in elementary schools.
Laboratory fee, \$2.00. (Blough.)

Ed. 247. Seminar in Science Education (2).

(See page 54.)

NOTE: For courses in physical education and health education, see the Catalog of
the College of Physical Education, Recreation, and Health. (Blough.)

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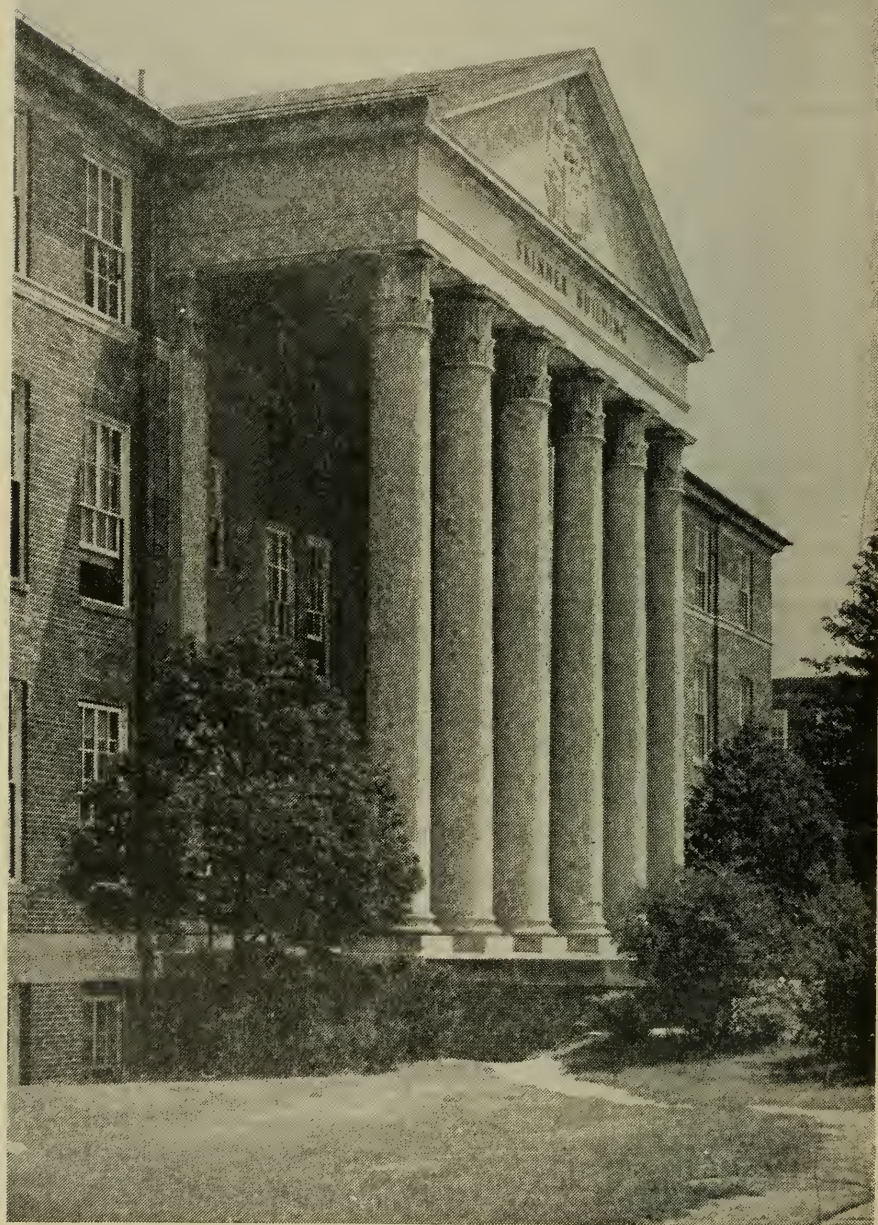
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SKINNER BUILDING
Headquarters of the College of Education

“**E**DUCATION does not mean teaching people what they do not know. It means teaching them to behave as they do not behave. It is not teaching the youth the shapes of the letters and the tricks of numbers, and then leaving them to turn their arithmetic to roguery and their literature to lust. It means, on the contrary, training them into the perfect exercise and kingly continence of their bodies and souls. It is painful, continual and difficult work to be done by kindness, by watching, by warning, by precedent, and by praise, but above all—by example.”—John Ruskin.

“In our country no man is worthy the honored name of statesman, who does not include the highest practicable education of the people in all his plans of administration.”—Horace Mann.

“Promote, then, as an object of primary importance institutions for the general diffusion of knowledge. In proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened.”—George Washington.

“The good education of youth has been esteemed by wise men in all ages as the surest foundation of the happiness both of private families and of commonwealths.”—Benjamin Franklin.

“The whole people must take upon themselves the education of the whole people and be willing to bear the expense of it.”—John Adams.

“If a nation expects to be ignorant and free in a state of civilization, it expects what never was and never will be.”—Thomas Jefferson.

“A popular government without popular information or the means of acquiring it, is but the prologue to a farce or a tragedy, or perhaps both.”

James Madison

“An educated man is never poor and no gift is more precious than education.”—Abraham Lincoln.

“Without popular education no government which rests on popular action can long endure; the people must be schooled in the knowledge and in the virtues upon which the maintenance and success of free institutions depend.”

—Woodrow Wilson

“We have faith in education as the foundation of democratic government.”

—Franklin D. Roosevelt



SEPARATE CATALOGS

At College Park

Individual catalogs of colleges and schools of the University of Maryland at College Park may be obtained by addressing the Office of University Relations, University of Maryland, College Park, Md.

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1. General Information
2. College of Agriculture
3. College of Arts and Sciences
4. College of Business and Public Administration
5. College of Education
6. College of Engineering
7. College of Home Economics
8. College of Military Science
9. College of Physical Education, Recreation and Health
10. College of Special and Continuation Studies
11. Summer School
12. Graduate School

At Baltimore

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13. School of Dentistry
14. School of Law
15. School of Medicine
16. School of Pharmacy
17. School of Nursing

At Heidelberg

The catalog of the European Program may be obtained by addressing the Dean, College of Special and Continuation Studies, College Park, Maryland.

1957-1958



UNIVERSITY OF MARYLAND

THE COLLEGE OF

engineering

AT COLLEGE PARK



IMPORTANT

THE PROVISIONS of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

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For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, societies and special clubs, the University band, student publications, University Post Office and Supply Store, write to the Editor of Publications for the General Information issue of the Catalog.

See Outside Back Cover for List of Other Catalogs
Index on inside back cover.

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February 10, 1957

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AND

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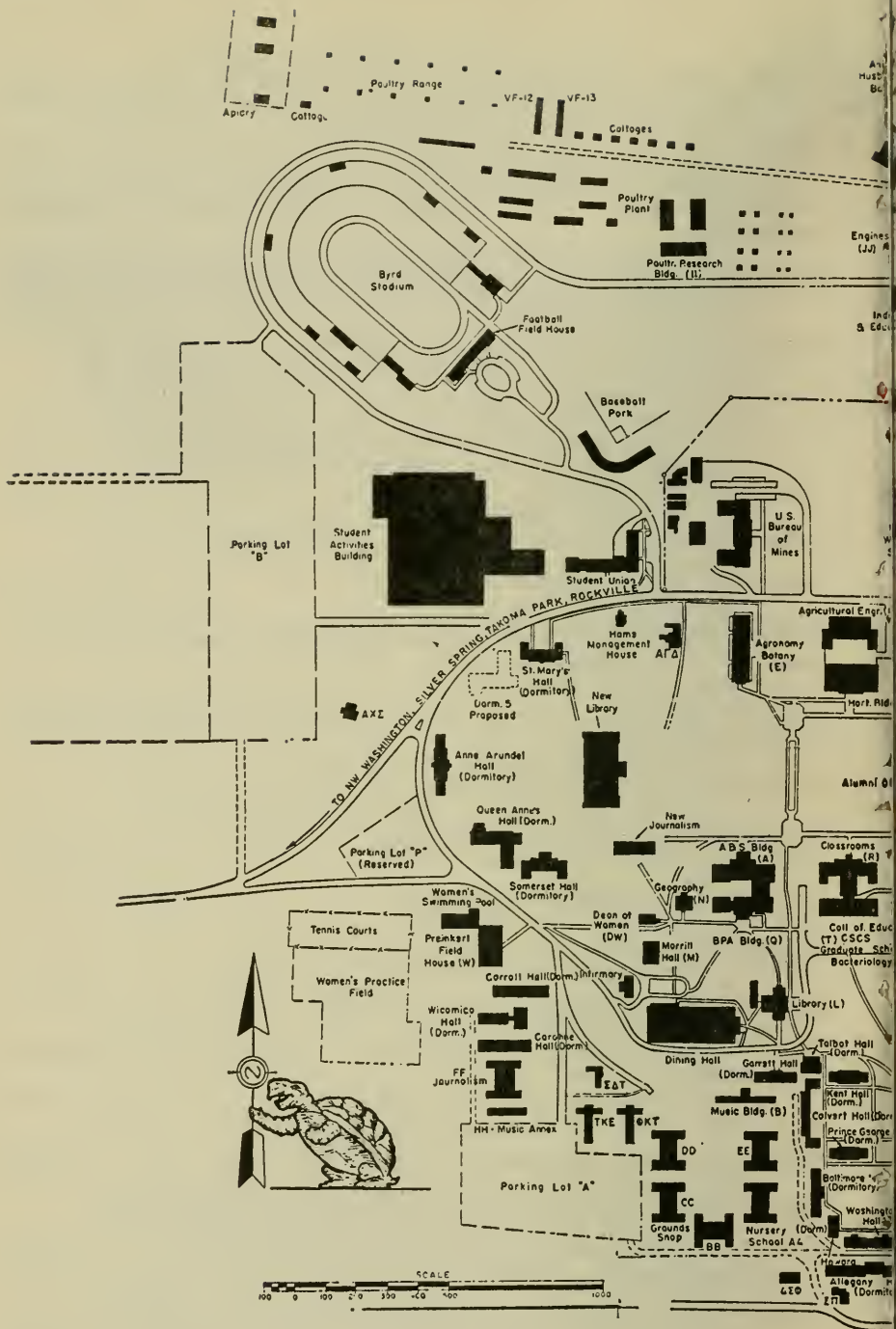
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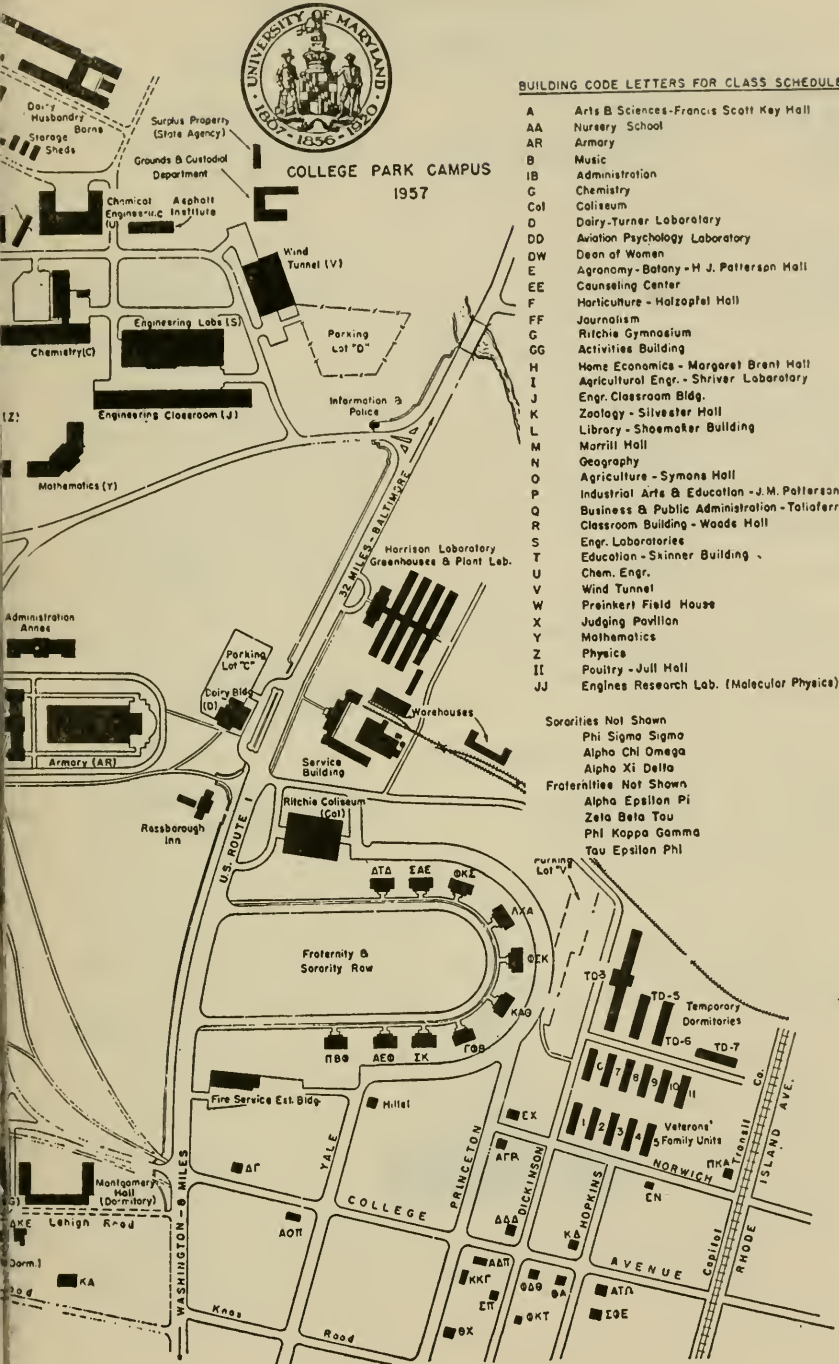
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UNIVERSITY OF MARYLAND



COLLEGE PARK CAMPUS 1957



1957-58 CALENDAR

First Semester

1957

September 17-20
September 23
November 27
December 2
December 21

Tuesday-Friday
Monday
Wednesday after last class
Monday, 8 A.M.
Saturday after last class

Registration, first semester
Instruction begins
Thanksgiving recess begins
Thanksgiving recess ends
Christmas recess begins

1958

January 6
January 20
January 21
January 22-29

Monday, 8 A.M.
Monday
Tuesday
Wednesday-Wednesday, inc.

Christmas recess ends
Charter Day
Pre-Examination Study Day
First Semester examinations

Second Semester

February 4-7
February 10
February 22
March 25
April 3
April 8
May 15
May 28
May 29-June 6
May 30
June 1
June 7

Tuesday-Friday
Monday
Saturday
Tuesday
Thursday after last class
Tuesday, 8 A.M.
Thursday
Wednesday
Thursday-Friday, inc.
Friday
Sunday
Saturday

Registration, second semester
Instruction begins
Washington's birthday, holiday
Maryland Day
Easter recess begins
Easter recess ends
Military Day
Pre-Examination Study Day
Second Semester examinations
Memorial Day, holiday
Baccalaureate exercises
Commencement exercises

Summer Session, 1958

June 23
June 24
August 1

Monday
Tuesday
Friday

Registration, Summer Session
Summer Session begins
Summer Session ends

Short Courses

June 16-21
August 4-9
September 2-5

Monday-Saturday
Monday-Saturday
Tuesday-Friday

Rural Women's Short Course
4-H Club Week
Firemen's Short Course



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GLENN L. MARTIN INSTITUTE OF TECHNOLOGY

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B.S., University of California, 1923; M.S., 1924; Ph.D., 1925; Registered Professional Engineer.

INSTITUTE FOR FLUID DYNAMICS AND APPLIED MATHEMATICS

JOHANNES MARTINUS BORGERS, Research Professor,

Doctor of Mathematics and Physics, University of Leiden; Doctor Honoris Causa, University Libre de Bruxelles 1948; Doctor Honoris Causa, University of Poitiers (France) 1950.

JEROME DAEN, Research Associate.

B.Ch.E., The City College of New York, 1950; Ph.D., Polytechnic Institute of Brooklyn, 1955.

JOAQUIN BASILIO DIAZ, Associate Research Professor.

B.A., University of Texas, 1940; Ph.D., Brown University, 1945. (On Sabbatical Leave).

AVRON DOUGLIS, Visiting Research Professor.

A.B., University of Chicago, 1938; M.A., New York University, 1949; Ph.D., New York University, 1949.

FRANCIS RYOSUKE HAMA, Assistant Research Professor.

M.E., University of Tokyo, 1940; D.Sc., 1952.

JOSEF HERZOG, Research Associate.

Dipl. Ing. (B.Sci.), Technical University of Graz, 1950; Doctor of Tech.Scis., 1955.

ISAO IMAI, Visiting Research Professor.

M.Sc., University of Tokyo, 1936; D.Sc., 1943.

RICHARD LEE INGRAHAM, Research Associate.

B.S. (s.c.l.) Harvard College, 1947; M.A., Harvard University, 1950; Ph.D., 1952.

AKIRA ISIHARA, Research Associate.

B.S., Mito High School, 1941; M.S., Tokyo University, 1943; Doctor of Sci., 1955.

GUNTHER JUNGCLAUS, Research Associate.

Diplom. Mathematiker, University of Göttingen, 1950; Dr. rer. Nat., 1955.

SHOON K. KIM, Research Associate.

B.S., Department of Applied Chemistry, Keijo Technical College, 1941; M.S., Osaka, Japan, 1944; Ph.D., Yale University, 1956.

GEOFFREY S. S. LUDFORD, Associate Professor.

B.A., Cambridge University, 1948; M.A., 1952; Ph.D., 1952.

MONROE HARNISH MARTIN, Director and Professor of Mathematics.

B.S., Lebanon Valley College, 1928; Ph.D., Johns Hopkins University, 1932.

ELLIOTT WATERS MONTROLL, Research Professor.

B.S., University of Pittsburgh, 1937; Ph.D., 1940.

SHIH I. PAI, Research Professor.

B.S., National Central University (China), 1935; M.S., Massachusetts Institute of Technology, 1938; Ph.D., California Institute of Technology, 1940.

LAWRENCE EDWARD PAYNE, Associate Research Professor.

B.S., Iowa State College, 1946; M.S., 1948; Ph.D., 1950.

MAURO PICONE, Visiting Research Professor; Director, Istituto Nazionale per le Applicazioni Del Calcolo, Rome.

Ph.D., University of Pisa, 1907.

CARLO PUCCI, Assistant Research Professor.

Dr. of Math., Firenze University, 1948; Libero Docente in Analisi Matematica, University of Rome, 1956.

WERNER K. F. RHEINBOLDT, Post Doctoral Fellow.

Diplom. Mathematiker, University of Heidelberg, 1952; Dr. rer. Nat., University of Freiburg, 1955.

PHRIXOS JOHN THEODORIDES, Visiting Research Professor.

Dr. Sc. Techn., Federal Institute of Technology (Zurich, Switzerland), 1921.

HANS FELIX WEINBERGER, Assistant Research Professor.

B.S., Carnegie Institute of Technology, 1948; M.S., 1948; Sc.D., 1950.

ALEXANDER WEINSTEIN, Research Professor.

Ph. D., Zurich, 1921; Doct. es Sc., Paris, 1937.

JOHN ROBERT WESKE, Visiting Research Professor.

Dipl. Ing., Hanover Institute of Technology, 1924; M.S., Harvard University, 1931; S.D., 1934. Registered Professional Engineer.

HELMUT D. WEYMANN, Assistant Research Professor.

Diplom. in Physics, Technische Hochschule, Aachen, 1952; Dr. Rer. Nat., 1954.

HSUN-TIAO YANG, Research Associate.

B.S., Central University, 1946; M.S., University of Washington, 1950; Ph.D., California Institute of Technology, 1955.

WIND TUNNEL

DONALD SHAEFFER GROSS, Director,

B.S., University of Maryland, 1947.

JACQUELYN ROOFE LECKIE, Chief Computer.

B.A., Winthrop College, 1943.

WILLIAM STANLEY SEKSCIENSKI, Junior Engineer.

B.S., University of Maryland, 1955.

RICHARD ISAAC WINDSOR, Assistant Director.

B.S., University of Maryland, 1950.

FIRE SERVICE EXTENSION

ROBERT CHARLES BYRUS, Director.

WILLIAM THOMAS OWENS, Senior Instructor.

JAMES COLE ROBERTSON, Senior Instructor.

B.S., University of Southern California, 1954.

ROBERT JAMES SMITH, Senior Instructor.

ENGINEERING AND PHYSICAL SCIENCES LIBRARY

IRA KOIV, Serials Librarian.

M.A., University of Tartu, 1933; M.S. in L.S., Catholic University of America, 1957.

HENRY GRIB, Reference Librarian.

B.A., Alliance College, Pennsylvania, 1953; M.A. in L.S., Kent State University, Ohio, 1954.

MARGUERITE RITCHIE, Librarian.

B.S., State Teachers' College (Millersville, Pennsylvania) 1939; M.S. in L.S., Catholic University of America, 1951.

COLLEGE OF ENGINEERING
GLENN L. MARTIN INSTITUTE OF TECHNOLOGY

S. Sidney Steinberg, B.E., C.E., Dean

THE primary purpose of the College of Engineering is to train young men to practice the profession of Engineering. It endeavors at the same time to equip them for their duties as citizens and for careers in public service and in industry.

In training professional engineers it is necessary that great emphasis be placed on the fundamentals of mathematics, science and engineering so as to establish a broad professional base. Experience has also shown the value of a coordinated group of humanistic-social studies for engineering students since their later professional activities are so closely identified with the public. It is well recognized that an engineering training affords an efficient preparation for many callings in public and private life outside the engineering profession.

The buildings occupied by the College of Engineering were made possible through the interest of Mr. Glenn L. Martin of the Glenn L. Martin Company of Baltimore, which resulted in large gifts from the Company to the University, to which have been added funds made available by the Legislature of Maryland. The units consist of four structures, namely, the General Engineering building, an Engineering Laboratories building, a Chemical Engineering building, and a Wind Tunnel building. The Departments of Mathematics, Physics, Chemistry, and Industrial Arts, whose courses are basic to Engineering, are housed in buildings contiguous to and coordinated with the College of Engineering, thereby promoting a community of interest that is of great value to the departments concerned.

The length of the normal curriculum in the College of Engineering is four years and leads to the bachelor's degree. In most cases these four years give the engineering graduate the basic and fundamental knowledge necessary to enter upon the practice of the profession. Engineering students with superior scholastic records are advised to supplement their undergraduate programs by at least one year of graduate study leading to the master's degree. All the engineering departments encourage graduate work leading to the doctor's degree which is essential for graduate engineers desiring to enter research and development. Graduate programs will be arranged upon application to the chairman of the engineering department concerned.

In order to give the new student time to choose the branch of engineering for which he is best adapted, the freshman year of the several curricula is the same. Lectures and conferences are used to guide the student in making a proper choice. The sophomore courses in the various branches differ slightly, but in the junior and senior years the students are directed definitely along professional lines.

Admission Requirements

In selecting students for admission to the University more emphasis is placed upon good marks and other indications of probable success in college rather than upon a fixed pattern of subject matter. In general, 4 units of Eng-

lish, $3\frac{1}{2}$ units of Mathematics including Solid Geometry, and 1 unit each of Social and Natural Sciences is required. Fine Arts, Trade and Vocational subjects are acceptable as electives.

It is possible, however, for high school graduates having the requisite number of entrance units to enter the College of Engineering lacking one unit of Advanced Algebra and one-half unit of Solid Geometry. The program for such students would be as follows: during the first semester, five hours a week would be devoted to making up algebra and solid geometry; in the second semester, mathematics of the first semester would be scheduled; and the second semester mathematics would be taken in the Summer School.

All students desiring to enroll in the College of Engineering must apply to the Director of Admissions of the University of Maryland at College Park.

For a more detailed statement of admissions, write the Director of Publications for a copy of the "General Information Issue of the Catalog.

Bachelor Degrees in the College of Engineering

Courses leading to the degree of Bachelor of Science are offered in the Departments of Aeronautical, Chemical, Civil, Electrical, and Mechanical Engineering, and in Metallurgy; and a Bachelor of Science degree in Fire Protection.

Costs

Actual annual costs of attending the University include: \$165.00 fixed charges; \$75.00 special fees; \$400.00 board; \$140.00 to \$170.00 lodging for Maryland residents, or \$180.00 to \$220.00 for residents of other States and Countries; and laboratory fees which vary with the laboratory courses pursued. A matriculation fee of \$10.00 is charged for all new students, and a college fee of \$4.00 per semester is charged to all students registered in the College of Engineering. A charge of \$250.00 is assessed to all students who are non-residents of the State of Maryland.

Military Instruction

All male students unless specifically exempted under University rules are required to take basic air force R. O. T. C. training for a period of two years. The successful completion of this course is a prerequisite for graduation but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of military training will be required to complete the course or take it until graduation, whichever occurs first.

During their Junior and Senior years, selected students may carry Advanced Air Force R. O. T. C. courses which lead to a regular or reserve commission in the United States Air Force.

General Information

For information with reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, schol-

arships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, sororities, societies and special clubs, the University Band, student publications, University Post Office and Supply Store, write to the Editor of Publications for the General Information Issue of the Catalog.

Advanced Degrees in Engineering

Candidates for advanced degrees in Engineering and in Metallurgy are accepted in accordance with the procedure and requirements of the Graduate School. See Graduate School Catalog.

Equipment

The Engineering buildings are provided with lecture-rooms, recitation-rooms, drafting-rooms, laboratories, and shops for various phases of engineering work.

The drafting-rooms are fully equipped for practical work. The engineering student must provide himself with an approved drawing outfit, supplies, and books.

LABORATORIES

Aeronautical Engineering Laboratories

Aerodynamics Laboratory. The Aerodynamics Laboratory is equipped for study in several phases of aerodynamic problems. Research can be carried out in the following fields: Optical evaluation and pressure measurements in supersonic flows; total drag measurements on projectile-type bodies and spheres; analogue solutions of potential flow problems in both incompressible and compressible flow. Equipment available includes: 6-inch supersonic wind tunnel with interchangeable nozzle blocks for two-dimensional flows at Mach numbers varying from 1.2 to 3; two-foot circular low speed wind tunnel; ballistic range; water table for hydraulic analogy; large electrolytic tank for electric analogy; Schlieren optical system; high speed flash photographic unit; strain-gage type pressure pick-ups; manometer board; other accessories shared with the structures laboratory.

Wind Tunnel Laboratory. The University of Maryland Wind Tunnel has a test section measuring 7.75 feet by 11 feet with air velocities up to 280 miles per hour. The six component balance system prints and simultaneously punches data into International Business Machine cards. This permits the reduction of data automatically through use of standard punched card machines. A variable frequency power source with precision metering makes possible the operation of electric motors in airplane models to simulate propeller effects. Steady pressures are indicated on a 100-tube manometer board and unsteady pressures are recorded on a standard oscillograph with special electrical instruments.

The laboratory is currently engaged in a year-round program of airplane and missile development for aircraft companies and the military services. Provision is made for active participation of senior students in one test during the

year in connection with Aeronautical Laboratory. Facilities are also available to graduate students working on special subsonic problems.

Structures Laboratory. The laboratory is designed to extend and complement theoretical solutions to practical design problems and to provide facilities for proof tests of built-up structural units under both static and dynamic loads.

The equipment consist of a 400,000 pound capacity Universal testing machine, a 24,000 pound Universal testing machine complete with stress-strain recorder, a 500 ton hydraulic compression jack, hydraulic tension-compression jacks and pumps, and lead shot bags for applying structural loading. A rigid test rig is a permanent fixture in the laboratory. For measuring loads there are available traction dynamometers and SR-4 tension-compression load cells. The laboratory also has SR-4 strain indicating equipment with switching and balancing units, extensometers, compressometers, Huggenberger tensometers, and an oscillograph for measuring strain.

Differential Analyzer. A 10-integrator mechanical differential analyzer is jointly operated with the Electrical Engineering Department. This analyzer is used for the solution of differential equations which cannot be solved by analytical methods and are impractical to solve by numerical methods.

Aeronautical Shop. The shop includes complete facilities for the working of metal, sheet metal, and wood with particular emphasis on the tools used in aircraft construction.

The sheet metal shop includes squaring shears, bending brake, nibbler, bending rolls, aircraft sheet metal router, rivet squeezers, and an electric furnace with automatic control for heat treating rivets.

The machine shop includes two quick-change lathes, universal milling machine with vertical mill attachment, shaper, drill press, electric welder, acetylene welding and cutting outfit, metal cutting bandsaw, power hacksaw, tool grinders, arbor press, table saw, belt sander, slotter and two-ton hydraulic floor hoist.

Chemical Engineering Laboratories

The Chemical Engineering building contains lecture rooms, library, laboratories, shops, storerooms, dark rooms and offices, equipped for the full range of chemical engineering, metallurgical and nuclear engineering studies, from the elementary chemical and physical and nuclear reactions underlying process development to the construction and operation of pilot plants and the design of full scale equipment. Laboratories are maintained for (1) General Testing and Control; (2) Unit Operations; (3) Unit Processes; (4) Nuclear Engineering; (5) Metallurgy; (6) Gas and Fuel Analysis; (7) Cooperative Research; (8) Graduate Research. Shops include a complete machine shop, a wood shop and a student shop.

General Testing and Control Laboratory. In this laboratory there is available complete equipment for the chemical and physical testing of water, gases, coal, petroleum, and related chemicals, and for general industrial chemicals, both inorganic and organic.

Unit Operations Laboratory. This laboratory contains equipment for the study of fluid flow, heat flow, refrigeration, air conditioning, drying, filtration, distillation, evaporation, crystallization, crushing, grinding, combustion, gas absorption, extraction, and centrifuging. For the study of fluid flow a permanent hydraulic assembly is available, and this includes flow meters of most types. A Chemical Control Laboratory is maintained in conjunction with the Unit Operations Laboratory.

In the laboratory there is a large column still with a kettle capacity of 100 gallons, equipped for the measurement of temperature and pressure, sampling devices, condensers, and vacuum receivers. This still is so designed that it can be used either as a batch type unit, continuous feed type, direct pot still, steam still, or as a vacuum still. Studies in evaporation can be made on a double effect evaporator, one unit of which is equipped with a horizontal tube bundle and the other with a vertical tube bundle. Dryers include cabinet, tray and vacuum types. Gas absorption equipment includes a stoneware column packed with different types of packings in respective sections so that comparative studies may be made. Filtration equipment includes an Oliver continuous vacuum filter and also plate and frame, Sweetland and Sparkler types. Combustion equipment available consists of an industrial carburetor, pot furnace, premix gas-fired furnace and the usual gas analysis equipment. For grinding there is a comminuting machine, jaw crusher, a disc crusher and ball mills. Mechanical shakers, standard sieve, and sub-sieve separator are available for particle size separation. Centrifugation studies may be made on a continuous super centrifuge, Tolhurst basket type or centrifugal dryer. Concentrating equipment includes a flotation cell and Wilfley table. Student shop facilities include a milling machine, shaper, lathes, drill presses, grinder,, welding equipment, and other tools necessary for unit operation studies.

Unit Processes Laboratory. The Unit Processes Laboratory is designed to permit the preparation of chemicals on a semi-industrial scale from 1 pound to 100 pounds. Both organic and inorganic compounds can be made. An advantageous feature is the integration of this laboratory with the unit operations laboratory, thereby allowing a broad range of typical chemical engineering activities. Equipment includes apparatus for autoclaving, nitration, sulfonation, reduction, oxidation, esterification and neutralization, halogenation, amination, diazotization and the like. Substances such as dyes, plastics, wetting agents, organic insecticides, e. g., D.D.T., aniline, nitrobenzene, phenol, paradichlorobenzene, ethyl acetate, cellulose acetate, benzaldehyde, B-naphthyl methyl ether and many others can be synthesized.

Electrochemical Process Studies include electric furnace operations, metal winning and refining, electroplating, corrosion, electrochemical preparations, chlorine and caustic soda manufacture, instrumentation, and related operations and processes.

The laboratory contains small dry rectifiers, one 500-ampere 6-12 V motor generator set, several 300-ampere motor generator sets, 75 KVA variable D.C. supply for furnace operations, and numerous storage batteries as power sources. The equipment includes a small (25KVA) silicon carbide furnace, aluminum electrolytic cell, small arc furnace for making ferrosilicon, ferro-

chromium, aluminum bronze and other alloys, numerous electrolytic cells for electroplating copper, lead, nickel, chromium, zinc, cadmium, brass, silver, gold, rhodium and other metals.

Nuclear Engineering Laboratories. A sub-critical nuclear reactor is available. Briefly, it consists of a 6' tank of water in which are arranged rods of natural uranium metal (a total of 2500 kgs) clad in aluminum. In this assembly is a neutron source made of a mixture of plutonium and beryllium metal. The uranium and the neutron source are on loan from the Atomic Energy Commission. The size and composition is insufficient for a self-sustained nuclear chain reaction. A self-sustained nuclear reaction would be called critical. This safety feature of the sub-critical system makes it ideal for many training purposes. This assembly is used to demonstrate principles of design and operation of full scale nuclear reactors and as a source for nuclear reactions.

To serve this sub-critical facility and to permit demonstration of the techniques of handling radioactive materials, there are available radiation detection equipment consisting of ionization chambers, proportional flow counters, Geiger tubes, scintillation detectors, several electronic scalers and count rate meters. Instruments for survey and protection of health are used for experiments in health physics.

Metallurgical Laboratories. These laboratories contain equipment for heat treating, testing and metallographic work. The large furnaces available for heat treating include a 16 KW Hoskins muffle furnace, an 18 KW Hevi-Duty salt pot furnace, an 8 KW Leeds and Northrup Vapocarb unit, and an American Gas Furnace Company salt pot furnace. Two special units are also available for student and research work. These are a 10 KW General Electric Electronic heater and an arc furnace. In addition to the above, a number of smaller furnaces are available for general laboratory use.

The testing equipment consists of one Baldwin 60,000 lb. Southwark-Tate-Emery testing machine, one 5,000 lb. Dillon Universal Tester, one 110/220 ft. lb. Riehle impact testing machine, and a Chapman high temperature testing machine. Brinell and Rickwell hardness testers are also available.

The metallographic equipment consists of one Vickers projection microscope with full range of accessories, a number of smaller metallurgical microscopes, several Gamma cameras for the small microscopes, a Disa electro-polishing unit, and all additional equipment (mounting presses, sanders, polishing wheels, etc.) necessary for mounting and preparing specimens for examination. The metallurgical laboratories are also equipped with a North American Phillips 60 KV-50 MA X-ray diffraction apparatus.

Civil Engineering Laboratories

Hydraulics Laboratory. The equipment consists of four electrically driven pumps together capable of circulating a maximum of 4,000 gallons of water per minute, a standpipe 5 feet in diameter and 60 feet high which can be used as a constant level tank at three different heads; 150 foot head tank, 300 foot head tank, 3 foot by 4 foot by 15 foot metal weir tank, 3 foot by 4 foot by 25 foot

glass sided flume for weir and model experiments, Pelton water wheel with glass sides for direct observation, Rodney-Hunt reaction turbine, measuring tanks, weirs, nozzels, venturi meters, other meters, gauges, and other small apparatus necessary for the study of the flow characteristics of water.

Materials Testing Laboratory. Apparatus and equipment are provided for making standard tests on various construction materials, such as sand, gravel, stone, steel, concrete, lumber, brick, bituminous materials and road mixes.

Equipment includes a 400,000-pound universal hydraulic testing machine, a 60,000-pound universal hydraulic testing machine, three 100,000-pound screw power universal testing machines, torsion testing machine, impact testing machine, fatigue testing machine, weather-o-meter, Rockwell, Brinell and Shore hardness testers, abrasion testing machine, rattler, cement autoclave, constant temperature chamber, moist room and other facilities for mixing, curing and testing concretes and mortars, as well as extensometer and micrometer gauges, electrical strain gauges and other special devices for ascertaining the elastic properties of various materials.

Sanitary Laboratory. The laboratory is designed to provide facilities for instruction and research in water and sewage problems.

The apparatus and equipment required to make standard chemical and bacteriological analyses of water and sewage are available.

Ample space and equipment for model work are provided in this laboratory and since it is adjacent to the hydraulics laboratory, access to its facilities for additional studies is available.

Soil Mechanics Laboratory. The laboratory is designed for instruction and research into the properties of soils and their structural applications. The laboratory is equipped for the performance of all the usual soil tests, sieve and hydrometer analysis, Atterberg limits, compaction, permeability, capillarity, consolidation and strength.

The strength testing equipment includes direct shear and triaxial devices to be loaded statically or by variable speed motors and a universal testing machine with a 240-pound low range and automatic recorder. A repetitive loading device is available to simulate fatigue or compaction from traffic loads. Compaction equipment includes an automatic tamper and a variable frequency vibration table.

Also available are field sampling and resistivity exploration equipment, California bearing ratio apparatus for field and laboratory, apparatus for chemical and microscopic studies and motorized pulverization and mixing equipment.

Structural Models Analysis Laboratory. This laboratory is equipped for the mechanical solution of indeterminate structures by use of scaled models. The equipment available for this analysis includes the Beggs Deformeter, the Eney Deformeter and the tools necessary for plastic model construction. Equipment for making brass spring equivalents of trussed frame-works is available, as are machines for photoelastic studies and membrane analogy (torsion) studies.

Research Foundation. The National Sand and Gravel Association and the National Ready Mixed Concrete Association have, by arrangement with the College of Engineering, established their joint testing and research laboratory at the University. The purpose of the Research Foundation thus organized is to make available to the Association additional facilities for its investigational work, and to provide for the College of Engineering additional facilities and opportunities for increasing the scope of its engineering research.

Surveying Equipment. Surveying equipment for plane, topographic, and geodetic surveying is provided properly to equip several field parties. A wide variety of surveying instruments is provided, including foreign as well as domestic makes; and stereoscopic instruments are available for the interpretation and use of aerial photographs.

Special Models and Specimens. A number of models illustrating various types of highway construction and highway bridges are available.

The College of Engineering has recently been the recipient of two extensive collections of minerals and geological specimens: one from the estate of the late William H. Wagner of Washington, D.C., and the other from the estate of the late Walter C. Parkhurst of Baltimore, Md.

Electrical Engineering Laboratories

Electrical Machinery Laboratory. This laboratory, with a floor space of 5,760 square feet, is divided into four working areas, each area being serviced by a modern distribution switchboard and auxiliary panels. The distribution switchboard also provides inter-connection between each working area as well as to the various other laboratories situated throughout the electrical engineering department. Each working area is provided with an educational DC-AC motor generator and a variety of modern motors, generators, transformers, and other electrical devices of such size and design as to give typical performance characteristics. An overhead crane is available to facilitate the moving and rearrangement of the various machines.

Electric power is supplied to the laboratory by a three-unit motor-generator set consisting of a 150-HP synchronous motor driving a 50-KW, 125/250 volt direct current generator, and a 62.5 KVA, 80 per cent power factor, 3-phase, 60-cycle generator. This latter machine is so connected as to supply both 120 volts and 240 volts simultaneously. Modern switchgear provides well regulated voltage from each generator.

Adjoining the laboratory is an instrument and small-equipment room provided with a large assortment of measuring instruments essential to practical electrical testing, namely ammeters, voltmeters, wattmeters, watt-hour meters, frequency meters, stroboscopes, tachometers, wheatstone bridges, double bridges, impedance bridges, oscillographs, and special rheostats.

A well appointed shop is available with modern metal and wood turning tools for the repair of equipment, the building of experimental devices, and the general repair of all laboratory facilities. Another adjoining room provides lecture room facilities, computation tables and reference material.

Industrial Electronics Laboratory. A floor area of 1,900 square feet adjacent to the machinery laboratory and connected with it by way of a two-ton monorail crane is equipped as an Industrial Electronics Laboratory.

This laboratory contains apparatus and controls similar to those used in industry in obtaining better products in greater quantities, by means of electronic devices.

The experimental apparatus consists of several amplidynes, an electronic welder, a high frequency heating unit, several types of electronic motor controllers, voltage regulators, photo-electric counters, thyatron rectifiers, servo-control systems, and X-ray installations.

The laboratory is energized from a distribution center similar to the system used in the adjacent machinery laboratory and in addition, a 400-cycle power source and high voltage power supplies are provided.

The instrument room and shop which serve the Machinery Laboratory also serve the Industrial Electronics Laboratory.

Sophomore Laboratory. A balcony overlooking the machine laboratory is equipped with seven work stations at which basic electrical engineering experiments are performed.

Equipment is provided for fundamental measurements of current voltage, power, resistance, and transmission losses. Basic non-linear circuit concepts are also studied experimentally in this laboratory.

Electrical Measurements Laboratory. Fifteen basic measurements experiments which constitute the laboratory portion of the "Electrical Measurements" course are housed in this laboratory.

Ballistic galvanometers, long solenoids, flux meters, potentiometers, a-c bridges, oscillographs, rotating standards, and impedance-measuring circuits are employed in measuring electric and magnetic quantities and in calibrating electrical instruments.

Photometry and Oscillographic Laboratory. A laboratory, provided with a dark room, is available for photometric and oscillographic measurements. The photometry apparatus consists of a bar photometer and four types of portable photometers and light meters. Typical lighting installations are available for experimental study.

Electromagnetic oscillographs are available for studying transient and steady-state time variations of electric currents and voltages. The dark room facilities permit on-the-spot development of the photographic film.

Electronics and Radio Engineering Laboratories. This laboratory is equipped with eight work stations, four of which are specifically outfitted for basic electronics experiments and four specifically for radio engineering experiments.

The electronics equipment consists of various bread-board layouts, signal generators, cathode-ray oscilloscopes, vacuum tube voltmeters, frequency meters, and a wide range of indicating instruments. With this apparatus, pentode and thyatron characteristics are studied experimentally and basic electronic measurements are performed. The performance characteristics of amplifiers, oscillators, and regulated power supplies are also investigated in this section of the laboratory.

The radio equipment consists of various bread-board layouts, including mixers, discriminators, oscillators, IF stages, inverters, class C amplifiers, and push-pull audio stages. Complete radio receivers and transmitters are available both in commercial form and in demonstration panel form for experimental study.

Adjacent to this laboratory is a combined instrument room and radio repair shop.

Microwave Engineering Laboratory. Experimentation and measurements in the frequency spectrum ranging from 2,000 to 10,000 megacycles per second are performed in this laboratory.

Signal generators covering this frequency range as well as a wide variety of magnetron, klystrons, and light-house tube oscillators are available.

Wave guides, slotted sections, coupling devices, attenuators, sectoral horns, and parabolic antennas are employed to demonstrate microwave techniques. Crystal detectors and bolometers are provided for signal detection and power measurements respectively.

Transmitter Laboratory. Space is provided on the upper floor of the main engineering building for the experimental study of long lines, transmitters, and antennas. Receiving and transmitting apparatus, as well as a shielded enclosure, are available for this purpose. Owing to the location of the laboratory, antennas may be installed readily and connected from the transmitter to the roof of the building, where a 50-by-500-foot unobstructed area may be used for antenna pattern measurements.

Mechanical Engineering Laboratories

Applied Mechanics Laboratory. This laboratory is equipped for the study of Dynamics and Stress Analysis. Experiments and research can be carried out in the fields of: vibration, steady and transients, photo-elasticity, and related subjects.

The equipment includes A.C. and D.C. strain gauge amplifiers, transient recorder and printers, vibrographs, 15G vibrating table, vibration pick-ups of various types and a photoelasticity bench for the study of two dimensional stress problems.

Engine Laboratory. This laboratory is for instruction in all phases of Internal Combustion Engine Work.

Experiments and research can be carried out in the fields of: ignition, injection, combustion and detonation, and engine performance.

Included in this laboratory are: variable compression ratio test engines for octane determination, diesel operation and general ignition work; multi-cylinder gasoline engines; eddy current, electric, and water dynamometers; and three jet engines. In addition there are indicators of various kinds including Piezo-electric and Cox intermittent as well as a number of different exhaust gas analyzers and temperature measuring devices.

Heating, Air Conditioning and Refrigeration Laboratory. Equipment is available in these laboratories for the study of heating and cooling units plus air flow, dehumidification and humidification systems. Heating tests can be

made on the performance of coal and oil burning units and hot water or warm air space heaters. In the study of refrigeration, freon and ammonia vapor compression units and absorption units are arranged for visual demonstration and equipped for performance tests.

In most cases, laboratory units are fitted with both hand and commercial automatic controls. Instruments that are used include mechanical and hot wire anemometers, pitot tubes, gas analyzers, orifice plates, inclined and vertical manometers, thermocouples, potentiometers, resistance thermometers and sling psychrometers.

Metallography Laboratory. This laboratory is equipped for the physical study of metals. Research and practice can be carried out in this laboratory in the following fields: crystallography and alloy systems, heat treatment and strength of materials, and macro and micro examination of metals. Included also are controlled heat treating and melting furnaces, bakelite mold press, polishing wheels, etching equipment, microscopes, photographic equipment, Universal testing machine, fatigue testing machine, hardness tester, Jominy end quench testing equipment, creep testing machine, cutting off wheels, thermo-couplers and pyrometers, and other special instruments.

The laboratory has a Bausch and Lomb I L S metalloscope for producing photomicrographs up to 2,000 magnifications.

Steam Power Laboratory. This laboratory is equipped for the study of steam power. Experiments and research can be carried out in this laboratory in the following fields: turbines, compressors, parallel operation of A.C. turbo-generators, series and parallel operation of turbines, condenser characteristics, etc.

Included in this laboratory are steam turbines, compressors, engines, indicators, condensers, injectors, and various special equipment and instruments. There is also a complete Educational Power Plant consisting of two 20KW A.C. turbogenerators, condenser, synchronous motor and gauge board.

Thermodynamics and Heat Transfer Laboratory. This laboratory is equipped for study and research in Thermodynamics and Heat Transfer.

Experiments can be performed in the determination of viscosity, heating value, conductivity, calibration of gauges, etc.

Equipment includes: bomb calorimeters, Junkers calorimeters, viscosimeters, distillation apparatus, conductivity box, Brown temperature (six channel) recorder, potentiometers, galvanometers, and related equipment.

Machine Shop. The machine shop is equipped with various types of lathes, planers, milling machines, drill presses, shaper, midget mill, and precision boring head. Equipment is available for gas and electric arc welding.

The shop equipment not only furnishes practice, drill, and instruction for students, but makes possible the complete production of special apparatus for conducting experimental and research work in engineering.

FIRE PROTECTION LABORATORIES

The extensive facilities of the Fire Service Department are available

for use by fire protection students. The automatic sprinkler and fire protection laboratory with a floor space of 1800 square feet contains twelve automatic sprinkler systems of both the dry and wet types. The laboratory is equipped with three fire alarm systems, and the automatic sprinkler systems are equipped with waterflow alarms, and supervisory alarm service.

There are three units for demonstration purposes; two from fire apparatus, and one stationary, electrically driven industrial type of fire pump.

Adjacent to the fire protection and sprinkler laboratory is a smoke and fire room where equipment and appliances may be actually tested; also, there is a well-equipped drill tower.

Miscellaneous equipment available for research and instructional purposes includes a carbon monoxide colorimetric tester, a pyrotannic detector, thermocouples and recording instruments, and numerous types of pitot and water pressure measuring gauges.

ENGINEERING AND PHYSICAL SCIENCES LIBRARY

As a supplement to the general University Library, the College of Engineering is fortunate to have a large and well-equipped Engineering and Physical Sciences Library located in the north wing of the new Mathematics building immediately adjacent to the General Engineering building. This Library consists of a commodious and comfortable reading room on the first floor, and three floors of book stacks above, with a capacity of over 100,000 volumes. All stacks are open to the students and contain individual study desks and lockers for student use. Six small conference rooms, equipped with chalkboards, are available for groups desiring to study together; and a number of individual study rooms are available for assignment to graduate students or others engaged in intensive research. A room on the second stack floor is equipped with micro-film and micro-card readers.

The Library contains collections on both the graduate and undergraduate levels in the fields of engineering, mathematics, physics, and industrial education, including approximately 800 subscriptions to scientific and technical journals. Special book collections donated by prominent engineers in several fields are housed here. Several newspapers are received daily, and the Maryland student chapters of the various engineering societies provide subscriptions to magazines of general recreational interest.

ANTIQUE TOOL EXHIBIT

A collection of interesting American antique hand tools, presented to the College of Engineering in memory of their collector, Mr. Herbert T. Shannon, is on exhibition in ten display cases on the first floor corridor of the Engineering classrooms building.

CURRICULA

The normal curriculum of each department is outlined on the following pages. The total credit hours required for graduation varies from 149 to 160, depending upon the engineering department in which the student is enrolled. Students are expected to attend and take part in the meetings of the student chapters of the technical engineering societies.

All professional curricula in the College of Engineering have been accredited by the Engineers' Council for Professional Development (ECPD), the national accrediting agency.

Student branches of the following national technical societies are established in the College of Engineering: American Institute of Chemical Engineers, American Society of Civil Engineers, American Institute of Electrical Engineers, American Society of Mechanical Engineers, Institute of Aeronautical Sciences, and Institute of Radio Engineers. The student branches meet regularly for the discussion of topics dealing with the various fields of engineering.

A student in the College of Engineering will be certified as a junior when he shall have passed all the basic technical courses of the Freshman and Sophomore years with an average grade of C (2.3) or higher.

A general average of at least C (2.0) is required for graduation from the College of Engineering; in addition, the student must obtain a grade of C or higher in each of his departmental professional courses of the junior and senior years.

The proximity of the University to Baltimore and Washington, and to other places where there are large industrial enterprises, offers an excellent opportunity for the engineering student to observe what is being done in his chosen field. An instructor accompanies students on all inspection trips, and students are required to submit a written report of each trip.

The courses listed in the curricula to follow will be found described in detail on the succeeding pages.

BASIC CURRICULUM FOR ALL FRESHMAN ENGINEERS

All freshman engineering students are required to take the following curriculum:

	Semester	
	I	II
*Freshman Year		
Eng. 1, 2—Composition and American Literature.....	3	3
Speech 7—Public Speaking.....	....	2
**Math. 18, 19—Elementary Mathematical Analysis.....	5	5
Chem. 1, 3—General Chemistry.....	4	4
Dr. 1, 2—Engineering Drawing.....	2	2
A. S. 1, 2—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities	1	1
Total	18	20

AERONAUTICAL ENGINEERING

Aeronautical Engineering deals with the design, construction, and maintenance of aircraft and aircraft power plants; aerodynamics and performance of aircraft; structural design and mechanical equipment; and the organization and operation of industrial aircraft plants.

*Students in the Fire Protection Curriculum also take F.P. 1, Introduction to Fire Protection, 0 credit, in the first semester.

**A qualifying test is given during registration to determine whether the students is adequately prepared for Math. 18 and 19. A student failing this test should take Math 1. Introductory Algebra, without credit.

Aeronautical Engineering Curriculum

Sophomore Year

	<i>Semester</i>	
	<i>I</i>	<i>II</i>
G. & P. 1—American Government.....	3	....
Soc. 1—Sociology of American Life.....	....	3
Math. 20, 21—Calculus.....	4	4
Phys. 20, 21—General Physics.....	5	5
Shop 1—Machine Shop Practice.....	2	....
Shop 2—Machine Shop Practice.....	....	1
Shop 3—Manufacturing Processes.....	....	1
Aero. E. 50—Airplane Detail Drafting.....	....	1
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities.....	1	1
Total	18	19

Junior Year

†Eng. 3, 4—Composition and World Literature; or.....	3	3
†Eng. 5, 6—Composition and English Literature.....	3	3
Math. 64—Differential Equations for Engineers.....	3	....
Mech. 2—Statics and Dynamics.....	5	....
Mech. 52—Strength of Materials.....	....	5
M. E. 53—Metallography.....	3	....
M. E. 100—Thermodynamics.....	3	....
Aero. E. 101—Aerodynamics I.....	....	3
Aero. E. 105—Airplane Fabrication Shop.....	....	1
Aero. E. 109—Aircraft Power Plants.....	....	3
E. E. 51, 52—Principles of Electrical Engineering.....	4	4
Total	21	19

Senior Year

†H. 5, 6—History of American Civilization.....	3	3
Aero. E. 102—Aerodynamics II.....	2	....
Aero. E. 106—Airplane Fabrication.....	1	....
Aero. E. 107, 108—Airplane Design.....	4	4
Aero. E. 110—Aircraft Power Plants.....	3	....
Aero. E. 111, 112—Aeronautical Laboratory.....	2	2
Aero. E. 113, 114—Mechanics of Aircraft Structures.....	3	4
Aero. E. 115—Aerodynamics III.....	....	3
Aero. E. 117—Aircraft Vibrations.....	....	2
Total	18	18

CHEMICAL ENGINEERING

Chemical Engineering deals primarily with the industrial and economic transformation of matter. It seeks to assemble and develop information on chemical operations and processes of importance in modern life and to apply this under executive direction, according to engineering methods, for the attainment of economic objectives. Modern chemical research has contributed so much to industrial and social welfare that the field of the chemical engineer may now be said to cover practically every operation in which any industrial material undergoes a change in its chemical identity.

When the Department of Chemical Engineering was founded in 1937, the Board of Regents transferred all the work in Industrial Chemistry, including the staff and equipment, to the Department of Chemical Engineering.

†A. S. 101, 102—Advanced Air Force R. O. T. C.—3 credits per semester may be substituted.

Beginning in 1948-49, the Department of Chemical Engineering expanded its offerings to include an option in Metallurgy. Students who elect this option, which is outlined below, will receive their bachelor's degree in preparation for work in Metallurgy. In 1954, instruction in Nuclear Engineering was added.

Chemical Engineering Curriculum

	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
<i>Sophomore Year</i>		
Math. 20, 21—Calculus.....	4	4
Phys. 20, 21—General Physics.....	5	5
Chem. 35, 37—Elementary Organic Chemistry Lectures.....	2	2
Chem. 36—Elementary Organic Laboratory.....	2	....
Chem. 19—Quantitative Chemical Analysis.....	4	....
Ch. E. 15—Stoichiometry and Chemical Engineering Control.....	....	4
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities.....	1	1
Total	21	19
<i>Junior Year</i>		
Econ. 37—Fundamentals of Economics.....	3	....
*Eng. 3, 4—Composition and World Literature; or.....	3	3
*Eng. 5, 6—Composition and English Literature.....	3	3
Ch. E. 103, f, s—Elements of Chemical Engineering.....	3	3
Chem. 187, 189—Elements of Physical Chemistry Lectures.....	3	3
Chem. 188, 190—Physical Chemistry Laboratory.....	2	2
Mech. 81—Statics and Dynamics.....	3	....
Mech. 51—Strength of Materials.....	....	3
Ch. E. 131—Chemical Engineering Economics.....	....	2
Ch. E. 140—Introduction to Nuclear Technology.....	2	....
G. & P. 1—American Government.....	....	3
Total	19	19
<i>Senior Year</i>		
†H. 5, 6—History of American Civilization.....	3	3
Ch. E. 105, f, s—Advanced Unit Operations.....	5	5
Ch. E. 109, f, s—Chemical Engineering Thermodynamics.....	3	3
Ch. E. 112, 113—Industrial Chemical Technology.....	3	3
E. E. 51, 52—Principles of Electrical Engineering.....	4	4
†Ch. E. 104—Seminar	1	1
Ch. E. 116—Applications of Adv. Math. Analysis in Chem. Engineering	3	....
Ch. E. 123—Elements of Plant Design.....	....	3
Total	22	22

Seniors desiring to do so may audit Mech. 53 in preparation for licensing examinations

†A. S. 103, 104—Advanced Air Force R. O. T. C.—3 credits per semester, may be substituted.

*A. S. 101, 102, 103, 104—Advanced Air Force R. O. T. C.—3 credits per semester, may be substituted.

†Students who are to become candidates for graduate degrees requiring foreign language may elect instead a foreign language and secure the American History credit in their graduate program. Students who wish to do graduate work in Electrochemical Engineering may elect Ch. E. 114, "Applications of Electrochemistry," and secure the American History credit in their graduate program.

†Students prepare reports on current problems in Chemical Engineering and participate under supervision of staff member. The content of this course is constantly changing so a student may receive a number of credits by re-registration.

Metallurgical Option

	(Semester)	
	I	II
<i>Sophomore Year</i>		
G. & P. 1—American Government.....	3	....
Math. 20, 21—Calculus.....	4	4
Phys. 20, 21—General Physics.....	5	5
Chem. 19—Quantitative Chemical Analysis.....	4	....
Ch. E. 15—Stoichiometry and Chemical Engineering Control....	....	4
Met. 23—Non-ferrous and Ferrous Metallurgy.....	....	4
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities.....	1	1
Total	20	21
<i>Junior Year</i>		
*Eng. 3, 4—Composition and World Literature.....	3	3
or		
*Eng. 5, 6—Composition and English Literature.....	3	3
Chem. 187, 189—Elements of Physical Chemistry.....	3	3
Met. 64, 66—Physical Metallurgy.....	5	5
Ch. E. 103, f, s—Elements of Chemical Engineering.....	3	3
Mech. 1—Statics and Dynamics.....	3	....
Mech. 51—Strength of Materials.....	....	3
Chem. 188, 190—Physical Chemistry Laboratory.....	2	2
Total	19	19
<i>Senior Year</i>		
Met. 182, 183—Optical & X-Ray Metallography.....	4	4
Met. 164, 166—Thermodynamics of Metallurgical Processes.....	3	3
Ch. E. 116—Application of Adv. Mathematical Analysis in Chemical Engineering	3	....
†Met. 104—Senior Metallurgical Seminar.....	1	1
Met. 168, 170—Metallurgical Investigations.....	2	4
Econ. 37—Fundamentals of Economics.....	....	3
*H. 5, 6—History of American Civilization.....	3	3
Ch. E. 140—Introduction to Nuclear Technology.....	2	....
Total	18	18

CIVIL ENGINEERING

Civil Engineering deals with the design, construction, and maintenance of highways, railroads, waterways, bridges, buildings, water supply and sewerage systems, harbor improvements, dams, and irrigation systems, and involves surveying and mapping including photogrammetry.

*A. S. 101, 102, 103, 104—Advanced Air Force R. O. T. C.—3 credits per semester, may be substituted.

†Students prepare reports on current problems in Chemical Engineering and participate under supervision of staff member. The content of this course is constantly changing so a student may receive a number of credits by re-registration.

‡Students who are to become candidates for graduate degrees requiring foreign language may elect instead a foreign language and secure the American History credit in their graduate program. Students who wish to do graduate work in Electrochemical Engineering may elect Ch. E.*114, "Applications of Electrochemistry," and secure the American History credit in their graduate program.

Civil Engineering Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
G. & P. 1—American Government.....	3	....
Math. 20, 21—Calculus.....	4	4
Phys. 20, 21—General Physics.....	5	5
Mech. 1—Statics and Dynamics.....	....	3
Surv. 1—Plane Surveying.....	2	....
Surv. 50—Advanced Surveying.....	....	4
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities.....	1	1
Total	18	20
<i>Junior Year</i>		
*Eng. 3, 4—Composition and World Literature; or.....	3	3
*Eng. 5, 6—Composition and English Literature.....	3	3
Soc. 1—Sociology of American Life.....	....	3
Dr. 3—Advanced Engineering Drawing.....	2	....
Geol. 2—Engineering Geology.....	....	2
Speech 108—Public Speaking.....	....	2
E. E. 50—Fundamentals of Electrical Engineering.....	3	....
M. E. 50—Principles of Mechanical Engineering.....	....	3
Mech. 50—Strength of Materials.....	4	....
Mech. 53—Materials of Engineering.....	....	2
C. E. 50—Fluid Mechanics.....	3	....
C. E. 100—Theory of Structures.....	....	4
Surv. 100—Curves and Earthwork.....	3	....
Total	18	19
<i>Senior Year</i>		
*H. 5, 6—History of American Civilization.....	3	3
Eng. 7—Technical Writing.....	....	2
Econ. 37—Fundamentals of Economics.....	3	....
Bact. 55—Lectures in Sanitary Bacteriology.....	2	....
Engr. 100—Engineering Contracts and Specifications.....	....	2
C. E. 101—Soil Mechanics.....	3	....
C. E. 102—Structural Design.....	6	....
C. E. 103—Concrete Design.....	....	6
C. E. 104—Water Supply.....	3	....
C. E. 105—Sewerage .....	....	3
C. E. 106—Elements of Highways.....	....	3
Total	20	19

ELECTRICAL ENGINEERING

Electrical Engineering deals with the generation, transmission, distribution, and utilization of electrical energy; and with the transmission and reception of intelligence as, for example, telephone, radio, radar, and television systems. Industrial Electronics and Automatic Regulation (or Servomechanisms) are two relatively new branches of Electrical Engineering which are in the creative stage of development.

*A. S. 101, 102, 103, 104—Advanced Air Force R. O. T. C.—3 credits per semester, may be substituted.

Electrical Engineering Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
G. & P. 1—American Government.....	3	...
Soc. 1—Sociology of American Life.....	3	...
Math. 20, 21—Calculus.....	4	4
Phys. 20, 21—General Physics.....	5	5
Mech. 1—Statics and Dynamics.....	...	3
E. E. 1—Basic Electrical Engineering.....	...	4
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities.....	1	1
Total	19	20
<i>Junior Year</i>		
*Eng. 3, 4—Composition and World Literature; or.....	3	3
*Eng. 5, 6—Composition and English Literature.....	3	3
Mech. 51—Strength of Materials.....	3	...
C. E. 50—Fluid Mechanics.....	...	3
Math. 64—Differential Equations.....	3	...
E. E. 60—Electricity and Magnetism.....	3	...
Ch. E. 140—Introduction to Nuclear Technology.....	2	...
E. E. 65—Direct Current Machinery.....	...	3
E. E. 100—Alternating Current Circuits.....	4	...
E. E. 101—Engineering Electronics.....	...	5
E. E. 104—Communication Circuits.....	...	4
Total	18	18
<i>Senior Year</i>		
*H. 5, 6—History of American Civilization.....	3	3
M. E. 51—Thermodynamics.....	4	...
M. E. 52—Power Plants.....	...	4
E. E. 102—Alternating Current Machinery.....	4	...
†E. E. 105, 106—Radio Engineering.....	4	4
†E. E. 107—Electrical Measurements.....	...	4
E. E. 108—Electric Transients.....	3	...
E. E. 109—Pulse Techniques.....	8	3
†E. E. 110—Transistor Circuitry.....	...	3
†E. E. 115—Feedback Control Systems.....	...	3
†E. E. 120—Electromagnetic Waves.....	...	3
Total	18	17

MECHANICAL ENGINEERING

Mechanical Engineering deals with the design, construction, and maintenance of machinery and power plants; heating, ventilation, and refrigeration; and the organization and operation of industrial plants.

*A. S. 101, 102, 103, 104—Advanced Air Force R. O. T. C.—3 credits per semester, may be substituted.

†Either E. E. 106 or E. E. 107.

‡Three Semester hours of Electrical Engineering elective.

Mechanical Engineering Curriculum

	Semester	
	I	II
<i>Freshman Year</i>		
G. & P. 1—American Government.....	3	....
Soc. 1—Sociology of American Life.....	....	3
Math. 20, 21—Calculus.....	4	4
Phys. 20, 21—General Physics.....	5	5
Surv. 1—Plane Surveying.....	....	2
Shop 1—Machine Shop Practice.....	2	....
Shop 2—Machine Shop Practice.....	....	1
Shop 3—Manufacturing Processes.....	....	1
A. S. 3, 4—Basic Air Force R. O. T. C. (Men).....	3	3
Physical Activities.....	1	1
Total	18	20
<i>Junior Year</i>		
*Eng. 3, 4—Composition and World Literature; or.....	3	3
*Eng. 5, 6—Composition and English Literature.....	3	3
Math. 64—Differential Equations for Engineers.....	3	....
Mech. 2—Statics and Dynamics.....	5	....
Mech. 52—Strength of Materials.....	....	5
E. E. 51, 52—Principles of Electrical Engineering.....	4	4
M. E. 53—Metallography.....	....	3
M. E. 54—Fluid Mechanics.....	....	3
M. E. 100—Thermodynamics.....	3	....
Total	18	18
<i>Senior Year—General Option</i>		
Engr. 100—Engineering Contracts and Specifications.....	....	2
*H. 5, 6—History of American Civilization.....	3	3
M. E. 101—Heat Transfer.....	2	....
M. E. 102—Heating and Air Conditioning.....	....	3
M. E. 103—Refrigeration.....	3	....
M. E. 104 105—Prime Movers.....	4	4
M. E. 106, 107—Mechanical Engineering Design.....	4	4
M. E. 108, 109—Mechanical Laboratory.....	2	2
Total	18	18
<i>Senior Year—Applied Mechanics Option</i>		
Engr. 100—Engineering Contracts and Specifications.....	....	2
*H. 5, 6—History of American Civilization.....	3	3
M. E. 101—Heat Transfer.....	2	....
M. E. 110—Applied Elasticity.....	3	....
M. E. 111—Dynamics.....	....	3
M. E. 104, 105—Prime Movers.....	4	4
M. E. 106, 107—Mechanical Engineering Design.....	4	4
M. E. 108, 109—Mechanical Laboratory.....	2	2
Total	18	18

FIRE PROTECTION

Fire Protection deals with the scientific and technical bases of safeguarding and preventing loss of life and property from fire, explosion, and related

*A. S. 101, 102, 103, 104—Advanced Air Force R. O. T. C.—3 credits per semester, may be substituted.

hazards; and the evaluation and elimination of hazardous conditions in our modern society.

Fire Protection Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
G. & P. 1—American Government.....	3	....
Soc. 1—Sociology of American Life.....	....	3
Math. 20, 21—Calculus.....	4	4
Phys. 20, 21—General Physics.....	5	5
Chem. 35, 37—Elementary Organic Chemistry Lectures.....	2	2
Chem. 36, 38—Elementary Organic Laboratory.....	2	2
A. S. 3, 4—Basic Air Force R. O. T. C.....	3	3
Physical Activities.....	1	1
Total	20	20
<i>Junior Year</i>		
*Eng. 3, 4—Composition and World Literature; or.....	3	3
*Eng. 5, 6—Composition and English Literature.....	3	3
Econ. 37—Fundamentals of Economics.....	3	....
B. A. 191—Property Insurance.....	....	3
I. Ed. 143, 144—Industrial Safety Education.....	2	2
Eng. 7—Technical Writing.....	2	....
M. E. 50—Principles of Mechanical Engineering.....	....	3
C. E. 49—Elements of Hydraulics.....	3	....
Chem. 19—Elements of Quantitative Analysis.....	....	4
F. P. 21, 22—Fire Protection Fundamentals.....	3	3
F. P. 13—Fire Causes and Hazards.....	3	....
F. P. 110—Fire Hydraulics Applications.....	....	2
Total	19	20
<i>Senior Year</i>		
*Hist. 5, 6—History of American Civilization.....	3	3
E. E. 50—Fundamentals of Electrical Engineering.....	3	....
M. E. 100—Thermodynamics .....	....	3
F. P. 124, 125—Elements of Fire Protection.....	3	3
F. P. 112—Tactics of Fire Control.....	3	....
F. P. 115—Essentials of Fire Prevention.....	....	3
F. P. 117—Fire Service Organization.....	3	....
F. P. 17, 18—Fire Inspection Practices and Methods.....	2	2
Electives	3	6
Total	20	20

AGRICULTURE — ENGINEERING

A five-year combined program in Agriculture and Engineering, arranged jointly by the College of Agriculture and the College of Engineering, permits students to become candidates for the degree of Bachelor of Science in the College of Agriculture at the end of four years and for the degree of Bachelor of Science in the Departments of Civil, Electrical, Mechanical, or Chemical Engineering at the end of the fifth year.

Details of this program will be found listed in the catalog of College of Agriculture.

*A. S. 101, 102, 103, 104—Advanced Air Force R. O. T. C.—3 credits per semester, may be substituted.

FELLOWSHIPS OF THE NATIONAL SAND AND GRAVEL ASSOCIATION RESEARCH FOUNDATION AND THE NATIONAL READY MIXED CONCRETE ASSOCIATION RESEARCH LABORATORY

The University of Maryland, in cooperation with the National Sand and Gravel Association and the National Ready Mixed Concrete Association, offers Fellowships for research on appropriate problems related to the sand and gravel and the ready mixed concrete industries. That offered by the National Sand and Gravel Association is known as the Stanton Walker Fellowship. Two are offered by the National Ready Mixed Concrete Association, known as the Stephan Stepanian and the C. Dolly Gray Fellowships. Fellows enter upon their duties on August 1. Payments under the Fellowships amount to \$2000 for the year and are made in ten monthly installments, in addition to tuition fees and costs of books.

Fellows register as students in the Graduate School of the University of Maryland. Class work is directed by the heads of the departments of instruction, but about half of the time will be spent in research work. The faculty supervisor is the Dean of the College of Engineering.

These fellowships are open to graduates in Engineering from an accredited college or university, who are qualified to undertake graduate study and research work leading to a Master's degree. Applications should be accompanied by a certified copy of college record, applicant's recent photograph, statement of technical and practical experience (if any), and letters from three persons, such as instructors or employers, covering specifically the applicant's character, ability, education, and experience.

The applications should be addressed: Dean, College of Engineering, University of Maryland, College Park, Maryland.

THE ASPHALT INSTITUTE FELLOWSHIP

The University of Maryland offers to graduate engineers a Fellowship sponsored by The Asphalt Institute and designated the Bernard E. Gray Fellowship. Its purpose is to assist in the support of a student undertaking graduate study and research work in asphalt technology leading to a Master's degree. The Fellow will be appointed for a two-year period commencing either on September 1 or February 1. The stipend is \$1,500 per year, payable in ten monthly installments.

The appointee to the Fellowship will register in the Graduate School of the University of Maryland. Work will be scheduled so that the Fellow's time will be divided between study of selected and approved courses and research on appropriate problems in asphalt technology, particularly the engineering uses of asphaltic materials. Laboratory facilities at College Park, Maryland, of both the University of Maryland and The Asphalt Institute will be available as needed. The faculty supervisor will be the Dean of the College of Engineering of the University assisted by the Engineer of Research of The Asphalt Institute.

Completion of the work leads to the degree of Master of Science. The Fellowship is open to qualified graduates in engineering from accredited colleges and universities. Forms for making application may be obtained by writing to the Dean of the Graduate School, University of Maryland, College Park, Maryland.

INSTITUTE FOR FLUID DYNAMICS AND APPLIED MATHEMATICS

The Institute for Fluid Dynamics and Applied Mathematics was established by the University to carry out fundamental research in applied mathematics and in theoretical and experimental fluid dynamics.

Theoretical and experimental studies of phenomena surrounding bodies moving at very high speeds are being carried out with the aid of shock tubes of special design. A low turbulence wind tunnel has been completed and is now in operation for theoretical and experimental studies of turbulence. Work in applied mathematics ranges from the mathematical theory of classical hydro-dynamics to the modern theory of transonic flow, with problems in eigenvalues, elasticity, electrostatics and partial differential equations coming in for consideration. A research program is also being carried out in the field of statistical mechanics, with emphasis on the theory of irreversible processes and the theory of solids. The research program of the Institute is partially supported by outside contracts.

The Institute offers its facilities for theoretical and experimental research in collaboration with the scientific agencies of the government located nearby. A special group sponsored directly by the United States Air Force is studying the problems of stability and control of high speed airplanes. Of particular interest is an investigation now being carried out on the mechanism of turbulence.

The Institute comprises Research Professors, Associate Research Professors and Assistant Research Professors responsible for carrying on research in the designated areas. They are assisted by Research Associates, Research Assistants, Post Doctoral Fellows, and Graduate Assistants (candidates for higher degrees). Each year the Institute invites a scholar of international renown as Visiting Research Professor. Faculty members from several University Departments participate in the activities of the Institute.

The Institute sponsors weekly Seminars dealing with its own research fields. In addition, it holds weekly colloquia on research problems in applied mathematics and applied mechanics, and also sponsors occasional lectures by distinguished scientists.

Each semester members of the Institute, in cooperation with the Departments of Aeronautical Engineering, Mathematics and Physics, offer courses carrying full graduate credit for students working towards advanced degrees. These courses form part of the regular departmental offerings and further information about them may be obtained from the official publications of the University, or from the Department concerned.

ENGINEERING SHORT COURSES

Through short courses, the College of Engineering carries the benefits of engineering teaching to persons and industries in various parts of the State. These courses offer, in addition to regular instruction, an opportunity for the discussion of problems of interest to those engaged in public works, in public health, and in public safety.

Volunteer Firemen's Short Course. In cooperation with the Maryland State Firemen's Association a short course is held annually at College Park for volunteer firemen throughout the State. This four-day course is designed to bring to firemen by personal participation the newest developments in fire control and extinguishment, as well as information on equipment maintenance, salvage operations, and timely fire service developments.

Fire Inspector's Short Course. This four-day short course is given for fire marshals and safety engineers from industry to develop fire prevention and fire protection programs of an advanced technical nature. Standards of the National Fire Protection Association are studied and their applications interpreted.

Motor Fleet Supervisors Training Course. This course is offered annually in cooperation with many national and state organizations interested in conservation and safety. It is open to fleet owners and operators, safety and personnel directors, fleet supervisors, and safety engineers.

Water and Sewage Treatment Plant Operators. This course is offered in cooperation with the State Department of Health, the Maryland-Delaware Water and Sewage Association, and the American Water Works Association.

Aggregates and Concrete. This course is sponsored jointly by the National Sand and Gravel Association, the National Ready Mixed Concrete Association and the College of Engineering. Its purpose is the instruction of representatives of member companies of the two associations in basic and fundamental technical information on aggregates and concrete.

Additional information regarding engineering short courses may be obtained from the Dean of the College of Engineering, University of Maryland, College Park, Maryland.

FIRE SERVICE EXTENSION DEPARTMENT

The Fire Service Extension Department is organized under the College of Engineering in cooperation with the State Department of Vocational Education, and operates with both Federal and State funds. The Department provides in-service training for firemen with classes conducted throughout the State by about 100 local instructors, with three full-time Senior Instructors. Basic training of 60 clock hours is given in the fundamentals of firemanship, as well as an advanced course of 60 clock hours, covering the technical field of fire prevention, control and extinguishment, and a third section of 60 clock hours in related technical information. A training course of 45 clock hours for industrial plant fire brigades is also available. A four-day short course is held

annually the first week in September at the University in the Fire Service Building. Specialized courses are scheduled to meet growing demand for more comprehensive technical knowledge. Included are Instructor Training, Conferences for Fire Company Presidents, Conferences for Fire Chiefs and Schools of Fire Officers. Firemen who have completed the prescribed training courses have been given preferential rating in positions in the military and naval fire fighting forces.

The Department also serves in an advisory capacity to the State Fire Marshal and municipal authorities in matters of fire prevention, fire protection, and fire safety regulations. The Director serves as Technical Advisor to the Maryland State Firemen's Association, and on various National Committees of the National Fire Protection Association.

Additional information may be obtained from Robert C. Byrus, Director, Fire Service Extension Department, Fire Service Building, University of Maryland, College Park, Maryland.

ENGINEERING EXPERIMENT STATION

WILBERT J. HUFF, *Director*

The Engineering Experiment Station carries on cooperative investigations with industries of Maryland and Departments of the State and Federal Governments. A diversity of engineering training, experience, and equipment represented by the faculty and laboratories of the College of Engineering is thus made available for the problems under inquiry.

The staff of the College of Engineering available for research studies will be glad to discuss proposed problems of importance to industry and of public interest where means can be found for the cooperative researches; such studies may be undertaken with the approval of the administration of the University.

COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

AERONAUTICAL ENGINEERING

Professor Sherwood; Associate Professors Corning, Rivello, Shen;
Instructor Schreier

For Advanced Undergraduates and Graduates

Aero. E. 50. Airplane Detail Drafting (1).

First semester. One laboratory period a week. Prerequisite, Dr. 3. Standards of airplane drafting. (Corning.)

Aero. E. 101. Aerodynamics I (3).

Second semester. Three lectures a week. Prerequisite, Phys. 21 and Math. 21. Basic fluid mechanics and aerodynamics theory. (Sherwood.)

Aero. E. 102. Aerodynamics II (2).

First Semester. Two lectures a week. Prerequisite, Aero. E. 101. Elements of hydrodynamics and application to engineering problems. (Sherwood.)

Aero. E. 105. Airplane Fabrication Shop (1).

Second semester. One laboratory period a week. Prerequisite, junior standing in Aero. E. (Schreier.)

Aero. E. 106. Airplane Fabrication (1).

First semester. One lecture period a week. Prerequisite, Aero. E. 105. Both Aero. 105 and Aero. E. 106 include aircraft sheet metal forming and fabrication. Airframe materials, sheet metal fabrication, machining, fasteners, welding, casting, forging, and costs. (Schreier.)

Aero. E. 107, 108. Airplane Design (4, 4).

First and second semesters. Two lectures and two supervised calculation periods per week. Prerequisites, Aero. 101, Aero. E. 104, and Mech. 52. Aero. E. 102 and Aero. E. 113 to be taken concurrently. Theory and method of airplane design, airplane stability and control, and structural design. Each student designs a jet transport, high speed private airplane or other suitable airplane of student's choice, based upon set specifications. Charts and formulas used in industry are derived and used as basis of design. Optimum airplane is obtained by variation of fundamental parameters. (Corning.)

Aero. E. 109, 110. Aircraft Power Plants (3, 3).

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, M. E. 100. Study of basic operating principles of reciprocating, turbojet, turboprop, ramjet and rocket engines. Specific topics of study include thermodynamic processes, combustion, fuels, carburetion, supercharging, lubrication, and engine performance. Various engine tests are run in the laboratory. (Schreier.)

Aero. E. 111, 112. Aeronautical Laboratory (2, 2).

First and second semesters. One lecture and one laboratory period a week. Prerequisite, Aero. E. 101. To be taken concurrently with Aero. E. 102 and Aero. E. 113. Wind tunnel tests. Structure tests. Ballistics tests. Fluid flow analogies. Report writing, original research project. (Staff.)

Aero. E. 113, 114. Mechanics of Aircraft Structures.

First and second semesters. First semester, 3 lectures a week. Second semester, 3 lectures and one calculation period a week. Prerequisite, Mech. 52, and Math. 64. Principles and problems of airplane stress analysis and structural design. (Rivello.)

Aero. E. 115. Aerodynamics III (3).

Second semester. Elementary theory of the flow of a compressible gas at subsonic and supersonic speeds. Prerequisite, Aero. E. 102. (Sherwood.)

Aero. E. 117. Aircraft Vibrations (2).

Second semester. Two lectures a week. Prerequisite, Math. 64. Vibration and other dynamic problems occurring in airplane structures. Specific topics of study include the single degree of freedom system, damping, forced vibrations, critical frequency, multiple degrees of freedom, and vibration isolation and absorption. (Rivello.)

For Graduates**Aero. E. 200. Advanced Aerodynamics (3).**

First semester. Three lectures a week. Prerequisites, Aero. E. 115, Math. 64. Review of thermodynamics and physical properties of gases. One dimensional flow of a perfect compressible fluid. Shock waves. Fundamental equations of aerodynamics of compressible fluid. Two-dimensional linearized theory of compressible flow, Prandtl-Glauert Method, Ackeret method, Rayleigh-Janzen method. Hodograph method Karman-Tsien approximation. Two-dimensional transonic and hypersonic flows. Exact solutions of two dimensional isentropic flow. (Pai.)

Aero. E. 201. Advanced Aerodynamics (3).

Second semester. Three lectures a week. Prerequisite, Aero. E. 200. Linearized theory of three-dimensional potential flow. Exact solution of axially symmetrical potential flow. Method of characteristics. (Two-dimensional and axially symmetrical flow.) Nozzle design; flow in jets; rotational flow of compressible fluid. One-dimensional viscous compressible flow. Laminar boundary layer of compressible fluids. (Pai.)

Aero. E. 202. Advanced Aircraft Structures (3).

First semester. Three lectures a week. Prerequisites, Math. 64 and Aero. E. 113, 114, or permission of the instructor. Introduction to two dimensional theory of elasticity, energy methods, plate theory, theory of elastic instability. (Rivello.)

Aero. E. 203. Advanced Aircraft Structures (3).

Second semester. Three lectures a week. Prerequisites, Aero. E. 202. Aerodynamic heating of structures, thermal stresses, creep, creep bending and buckling, visco-elastic theory. (Rivello.)

Aero. E. 204. Aircraft Dynamics (3).

First semester. Prerequisites, Math. 64 and Aero. E. 114. Dynamics of a rigid body and applications to airplane dynamics. Generalized coordinates and Lagrange's equations. Vibrations of simple systems. Dynamics of elastically connected masses. Influence coefficients. Mode shapes and principal oscillations. Transient stresses in an elastic structure. (Shen.)

Aero. E. 205. Aircraft Dynamics (3).

Second semester. Prerequisites, Math. 64 and Aero. E. 101. Wing divergence and aileron reversal. Theory of two dimensional oscillating airfoil. Flutter problems. Corrections for finite span. Compressibility effects. (Shen.)

Aero. E. 206, 207. Advanced Aircraft Powers Plants (3, 3).

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, M. E. 100; Aero. E. 109, 110. Special problems of thermodynamics and dynamics of aircraft power plants; jet and rocket engines. Research in power plant laboratory.

Aero. E. 208. Advanced Aircraft Design (3).

First semester. Three lectures a week. Prerequisites, Aero. E. 101, 102, 113, 114. Theory and method of airplane design. Special emphasis is placed on the derivations and theoretical background of the formulas and experimental data used. (Corning.)

Aero. E. 209. Stability and Control (3).

Second semester. Three lectures a week. Prerequisites, Aero. E. 101, 102. Dynamic longitudinal and lateral stability and control, preceded by a brief introduction to static stability. (Corning.)

Aero. E. 210. Aerodynamic Theory (3).

First semester. Prerequisites, Aero. E. 101, Math. 64. Fundamental equations in fluid mechanics. Irrotational motion. Circulation theory of lift. Thin airfoil theory. Lifting line theory. Wind tunnel corrections. Propellor theories. Linearized equations in compressible flow. (Shen.)

Aero. E. 211. The Design and Use of Wind Tunnels (Supersonic) (3).

First or second semesters. The design and use of wind tunnels (supersonic). Review of basic aerodynamics and thermodynamics. Problems in supersonic tunnel design such as pumping, power supply, condensation and driers. Equipment for measuring results, including balances, manometer, optical instruments, such as schlieren, spark illumination and X-ray equipment. Investigations in supersonic wind tunnels are described with special reference to similitude required for conversion to full scale. (Kurzweg.)

Aero. E. 212, 213. Bodies at Supersonic Speeds (3, 3).

First and second semesters. Prerequisites, degree in Aero. E. or M. E. or equivalent, and consent of instructor. Brief review of gasdynamics, drag, lift, stability, and damping on a body in a supersonic stream. Special aerodynamic problems in the design of supersonic missiles. Methods for obtaining accurate test data on the aerodynamic characteristics of supersonic missiles. (Kurzweg.)

Aero. E. 214. Seminar.

(Credit in accordance with work outlined by Aero. Engr. staff.) First and second semesters. Prerequisite, graduate standing.

Aero. E. 215. Research.

(Credit in accordance with work outlined by Aero. Engr. staff.) First and second semesters. Prerequisite, graduate standing.

Aero. E. 216. Selected Aeroballistics Problems (3).

First semester. Physical processes and aerothermodynamic laws connected with the flow around supersonic missiles. Boundary layer problems and the transfer of heat and mass. Prerequisite, degree in Aero. E. or E. E. or equivalent and consent of instructor. (Kurzweg.)

Aero. E. 217. Aerodynamics of Viscous Fluids (3).

Second semester. Fundamental concepts. Navier-Stokes' equations. Simple exact solutions. Laminar boundary layer theory. Pohlhausen method. Turbulent boundary layer; mixing length and similarity theories. Boundary layer in compressible flow. Prerequisite, Aero. E. 101, Math. 64. (Shen.)

Aero. E. 218. Selected Topics in Aerodynamics (3).

First or second semester. Prerequisites, Aero. E. 210, 115. Topics of current interest and recent advances in the field of aerodynamics. (Shen.)

CHEMICAL ENGINEERING

Professors Huff, Bonney, Schroeder, Pennington; Associate Professor Duffey; Instructors Reid, Costas; Lecturers Lieberman, Park, Moore.

Ch. E. 15. Stoichiometry and Chemical Engineering Control (4).

Second semester. Two lectures, 2 3-hour laboratories a week. Prerequisites, Chem. 19. Introductory laboratory studies of widely used materials, methods and computations encountered in the examination and interpretation of chemical engineering operations. Laboratory data are employed in heat and material balances of chemical processes. Laboratory fee, \$8.00 per semester. (Reid and Staff.)

For Advanced Undergraduates and Graduates**Ch. E. 103, f, s. Elements of Chemical Engineering (3, 3).**

First and second semesters. Three hours a week. Prerequisites, Chem. 3; Math. 21; Phys. 21. Theoretical discussion of underlying philosophy and methods in chemical engineering and elementary treatment of important operations involving fluid flow, heat flow, evaporation, humidity and air conditioning, distillation, absorption, extraction, and filtration. Illustrated by problems and consideration of typical processes. (Huff.)

Ch. E. 104. Chemical Engineering Seminar (1, 1).

One hour a week. Students prepare reports on current problems in Chemical Engineering and participate in the discussion of such reports. The content of this course is

constantly changing so a student may receive a number of credits by re-registration.

(Reid.)

Ch. E. 105, f, s. Advanced Unit Operations (5, 5).

Two lectures and one all-day laboratory period a week. Prerequisites, Ch. E. 103; Chem. 189, 190. Advanced theoretical treatment of basic chemical engineering operations. Study and laboratory operation of small scale semi-commercial type equipment. A comprehensive problem involving theory and laboratory operations is included to illustrate the development of a plant design requiring the utilization of a number of fundamental topics. Laboratory fee, \$8.00 per semester. (Bonney and Staff.)

Ch. E. 106, f, s. Minor Problems (6, 6).

Laboratory fee, \$8.00 per semester.

Ch. E. 107. Fuels and Their Utilization (3).

Second semester. Three hours a week. Prerequisites, Ch. E. 103, or permission of Department of Chemical Engineering. A study of the sources of solid, liquid, and gaseous fuels, their economic conversion, distribution, and utilization. Problems. (Huff.)

Ch. E. 109, f, s. Chemical Engineering Thermodynamics (3, 3).

Three hours a week. Prerequisites, Chem. 187, 189; Ch. E. 103, or permission of instructor. A study of the application of the principles of engineering and chemical thermodynamics to some industrial problems encountered in the practice of chemical engineering. (Bonney.)

Ch. E. 112, 113. Industrial Chemical Technology (3, 3).

Three hours a week. Prerequisites, Ch. E. 103, or simultaneous registration therein, or permission of the Department of Chemical Engineering. A study of the major chemical processes and industries combined with quantitative analysis of process requirements and yields. Plant inspection, trips, reports, and problems. (Schroeder.)

Ch. E. 114. Applications of Electrochemistry (4).

First semester. Three lecture hours and three laboratory hours per week. Prerequisite, consent of instructor. Laboratory fee, \$8.00.

Ch. E. 116. Applications of Advanced Mathematical Analysis in Chemical Engineering (3).

First semester. Three lectures a week. Prerequisites, Math. 20, 21 and Ch. E. 103. A study of methods for analysis and solution of chemical engineering problems by use of differential equations. Graphical, numerical and statistical methods and approximations by use of infinite series are covered. (Reid.)

Ch. E. 119. Empirical Equations and Nomography (3).

Second semester. Three hours a week. Prerequisite, consent of instructor.

Ch. E. 123, 124. Elements of Plant Design (3, 3).

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Ch. E. 103, f, s; Ch. E. 110 (or Ch. E. 116); Chem. 189. The solution of typical problems encountered in the design of chemical engineering plants. (Schroeder.)

Ch. E. 131. Chemical Engineering Economics (2).

Second semester, two lectures a week. Prerequisites, simultaneous registration in or completion of Ch. E. 108 f, s (or Ch. E. 112, 113), 109 f, s, and 123, or permission of instructor. Economic evaluation of chemical processes. Determination of investment and operating costs for chemical engineering plants. Effect of risk and taxation on profits from such plants. (Schroeder.)

Ch. E. 140. Introduction to Nuclear Technology (2).

Two lectures a week, first semester. Required of Juniors in Chemical and Electrical Engineering and Seniors in Chemical Engineering. Metallurgical option. Engineering description of the different parts of the atomic energy complex, including mining and refining of ores, isotopic and chemical separations and nuclear reactor operation. The novel chemical engineering techniques employed are discussed. The emphasis is on the nuclear reactor. This is an orientation course for those only generally interested in applied atomic energy. (Duffey.)

Ch. E. 142. Environmental Consideration of Nuclear Engineering (3).

Three lectures a week, first semester. Prerequisite, permission of instructor. Engineering analysis of protection of the public and the environment from the hazards of nuclear energy operations. Emphasis is on the handling and disposal of gaseous, liquid and solid radioactive wastes. Meteorological, hydrological and geological phases are included. Typical problems encountered from mining of ores through nuclear reactor operations and chemical separations are considered. Legislative and economic factors, site selection, plant design and operation as related to the environment are discussed. (Lieberman.)

Ch. E. 145. Applications of Differential Equations and Statistics in Chemical Engineering (3).

Second semester. One lecture, two laboratory periods per week. Prerequisites, Ch. E. 103, f, s, Ch. E. 110 (or Ch. E. 116) or permission of the instructor.

Ch. E. 148. Nuclear Technology Laboratory (3).

One lecture, two laboratory periods a week. Prerequisites, Chem. 3, Phys. 21, Math. 21, Ch. E. 140 or equivalents and permission of instructor. Laboratory operation of equipment demonstrating techniques of handling and making measurements with radioactive materials in the nuclear industry. Health physics experiments are included. Laboratory fee, \$8.00 per semester. (Duffey and Bonney.)

For Graduates**Ch. E. 201. Graduate Unit Operations (5).**

First semester. One-hour conference, three or more laboratory periods a week. Prerequisite, permission of the Department of Chemical Engineering. Advanced theoretical treatment of typical unit operations in chemical engineering. Problems. Laboratory operation of small scale semi-commercial units with supplemental reading, conferences and reports. Laboratory fee, \$8.00. (Bonney.)

Ch. E. 202. Gas Analysis (3).

One lecture and two laboratory periods a week. One semester. Prerequisite, permission of Department of Chemical Engineering. Quantitative determination of common

gases, fuel gases, gaseous vapors, and important gaseous impurities. Problems. Laboratory fee, \$8.00. (Bonney.)

Ch. E. 203. Graduate Seminar (1).

One hour a week. Required of all graduate students in Chemical Engineering. The content of this course is constantly changing so a student may receive a number of credits by re-registration. Students prepare reports on current problems in chemical engineering and participate in the discussion of such reports. (Staff.)

Ch. E. 205. Research in Chemical Engineering.

Credit hours to be arranged. The investigation of special problems and the preparation of a thesis in partial fulfillment of the requirements of an advanced degree. Laboratory fee, \$8.00 per semester. (Huff, Bonney, Duffey and Schroeder.)

Ch. E. 207, f, s. Advanced Plant Design Studies (3, 3).

Three conference hours a week. Prerequisite, permission of Department of Chemical Engineering. (Schroeder.)

Ch. E. 209, f, s. Plant Design Studies Laboratory (3, 3).

Three laboratory periods a week. Prerequisite, permission of Department of Chemical Engineering. Laboratory fee, \$8.00 per semester. (Bonney.)

Ch. E. 210, f, s. Gaseous Fuels (2, 2).

Two hours a week. Prerequisite, permission of Department of Chemical Engineering. An advanced treatment of some of the underlying scientific principles involved in the production, transmission and utilization of gaseous fuels. Problems in design and selection of equipment. (Huff.)

Ch. E. 214. Corrosion and Metal Protection (4).

Second semester. Four lecture hours a week. Prerequisites, Ch. E. 114 or Chem. 189 or Chem. 190 or consent of the instructor. The subjects to be covered include: Theories of corrosion of ferrous and non-ferrous metals, passive films, corrosion inhibitors, metal cleaning, stress corrosion, corrosive chemicals, electrolytic protection, restoration of ancient bronzes, organic coatings, metal coloring, parkerizing, hot dip coatings, plated coatings, and selection of engineering materials. Class demonstrations will illustrate the subject matter. Due to the diversity of subjects and scattered sources, considerable outside reading will be necessary. (Huff.)

Ch. E. 216. Unit Processes of Organic Technology (3).

Second semester. Three lectures a week. Prerequisites, permission of the Department. This course coordinates the study of fundamental principles of organic synthesis with the requirements of the industrial plant. (Bonney.)

Ch. E. 217. Unit Processes of Organic Technology Laboratory (2).

Second semester. Two or more laboratory periods a week. Prerequisite, permission of the Department. Pilot plant operation of processes such as halogenation, hydration, nitration, oxidation, reduction and sulfonation. Laboratory fee, \$8.00 per semester. (Bonney.)

Ch. E. 240, 241. Advanced Heat and Mass Transfer (2, 2).

First and second semesters. Elective of graduate students in Chemical Engineering and others. Prerequisite, permission of the Department. The technical and scientific elements of the mathematical theory of heat and mass transfer.

Ch. E. 250. Chemical Engineering Practice (6).

Four hours conference and forty hours per week of work in laboratory and plant for eight weeks. Prerequisite, permission of the Department. Not offered 1957-58.

Ch. E. 270. Plastics Technology (3).

First semester. Two lectures and one laboratory a week. Prerequisite, permission of the Department. Laboratory fee, \$8.00 per semester.

Ch. E. 280, 281. Graduate Chemical Engineering Thermodynamics (3, 3).

First and second semesters. Prerequisites, Ch. E. 109, f, s; Ch. E. 110 (or Ch. E. 116); or permission of instructor. Advanced studies of the applications of the principles of engineering and chemical thermodynamics to some industrial problems encountered in the practice of chemical engineering. (Bonney.)

Ch. E. 290. Chemical Engineering Process Kinetics (3).

First semester. Three lectures a week. Prerequisite, permission of instructor. Methods of application of kinetic data to the design of reactors for industrially important processes are illustrated by solution of typical problems. Treatments for both homogeneous and heterogeneous reactions are given. (Reid.)

Ch. E. 302, 303. Nuclear Reactor Engineering (3, 3).

First and second semesters. Three lectures a week. Prerequisite, permission of instructor. Introduction to the engineering problems of the design, construction and operation of typical nuclear reactors, including general design, nuclear reactor theory, materials of construction, heat transfer, control, etc. Emphasis is toward commercial nuclear reactors. (Duffey.)

Ch. E. 305. Sub-critical Nuclear Reactor Laboratory (3).

One lecture, two laboratory periods a week. Prerequisites: Ch. E. 14S, 302, 303 or equivalents and permission of instructor. Experimental work with the sub-critical nuclear reactor. The appropriate radiation detection equipment is used. Experiments, such as infinite multiplication factors, lattice amplification, temperature coefficients, fission product studies, neutron flux distribution in the lattice, and neutron activation are carried out. Laboratory fee, \$8.00 per semester. (Duffey and Bonney.)

Ch. E. 311. Nuclear Separation Engineering (2).

Second semester. Two lectures a week. Prerequisite, permission of instructors. Application of chemical engineering to the chemical and isotopic separations necessary for nuclear reactor operation. These separations include (1) processing of uranium, thorium and other ores. (2) chemical separation of plutonium, uranium, fission products and other elements from materials irradiated in nuclear reactors, (3) treatment and disposal of radioactive wastes, (4) isotopic separation of U235 and heavy water. (Duffey.)

Ch. E. 315. Industrial Applications of Nuclear Reactors (2).

Second semester. Two lectures a week. Prerequisite, permission of instructors. An engineering survey of the current applications and those under development. Included are such uses of radiation as producing valuable radioactive and stable isotopes, synthesizing chemicals, and preserving foods. The changes in the design and operation of power—only nuclear-reactor complexes required for such additional applications are discussed.

(Duffey.)

METALLURGICAL OPTION**Met. 23. Nonferrous and Ferrous Metallurgy (4).**

Second semester. Four lectures and demonstrations a week. Prerequisite, Chem. 3. The methods of extraction of the important metals and their fabrication. (Pennington.)

Met. 64, 66. Physical Metallurgy (5, 5).

First and second semesters. Three lectures, two laboratories a week. Prerequisites, Met. 23; Math. 21; Phy. 21. Principles of Crystallography as applied to metals; X-ray diffraction; physical metallurgy and appropriate systems, including optical and X-ray metallography; constitution and properties of alloy systems; phase transformations and diffusion theory. Laboratory fee, \$8.00 per semester. (Pennington.)

Met. 68, 70. Mechanical Properties of Metals (3, 3).

First and second semesters. Two lectures and one laboratory a week. Prerequisites, same as for Met. 64, 66. Introduction to metal forming operations, ingot casting, forging, rolling; powder metallurgy; metal tests, tensile, impact, creep, fatigue, hardness. Laboratory fee, \$8.00. (Pennington.)

For Advanced Undergraduates and Graduates**Met. 104. Senior Metallurgical Seminar (1, 1).**

One hour a week. Students prepare reports on current problems in Metallurgy and participate in the discussion of such reports. The content of this course is constantly changing so a student may receive a number of credits by re-registration. (Costas.)

Met. 164, 166. Thermodynamics of Metallurgical Processes (3, 3).

First and second semesters, three lectures a week. Prerequisites, Chem. 187, 189; Chem. 188, 190. The application of the principles of thermodynamics to metallurgical systems with emphasis on steel making; laws of chemical reactions; materials and reactions in steel making processes; applications of theory to steel making; applications of theory to selected non-ferrous systems. (Pennington.)

Met. 168, 170. Metallurgical Investigations (2, 4).

First semester, two three-hour laboratory periods a week; second semester, three lectures and one three hour laboratory period a week. Prerequisites, concurrent registration in or completion of Met. 182, 183. A study of the basic metals industry in which typical metallurgical processes in plant installations are considered in some detail. Class and individual assignments involving laboratory work and literature reviews. Laboratory fee, \$8.00 per semester. (Pennington.)

Met. 182, 183. Optical and X-ray Metallography (4, 4).

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, Met. 64, 66; Met. 68, 70; or permission of instructor. The application at an advanced level of the principles of metallography, with emphasis on the correlation of associated test procedures; constitution of metal systems and phase transformations; alloy steels; hardenability and tempering of quenched steels. Laboratory fee, \$8.00 per semester. (Park.)

Met. 188, 189. Alloy Steels I, II (2, 3).

First and second semesters. Two lectures per week. Prerequisites, graduate or undergraduate standing. (Met. 188 is not prerequisite to Met. 189.) Recent advances in the physical metallurgy of steel; ferrite, cementite, and austenite; the isothermal transformation of austenite; decomposition of austenite by continuous cooling; the effects of various metallurgical treatments on the mechanical properties of steels. The properties of quenched and tempered steels; importance of hardenability in engineering applications; calculation of hardenability; variables affecting hardenability; intensifiers; effects of alloying elements on the mechanical properties of steels; efficient use of alloying elements in steel. (Note: To be offered at off-campus installations as determined by departmental and registration requirements.) (Loring.)

For Graduates**Met. 205. Research in Metallurgy.**

Credit hours to be arranged. The investigation of special problems and the preparation of a thesis in partial fulfillment of the requirements of an advanced degree. Laboratory fee, \$8.00 per semester. (Pennington.)

Met. 220, 221. Solid Phase Reactions (3, 3).

First and second semesters. Three lectures a week. Prerequisites, Chem. 187, 189; Chem. 188, 190; Met. 182, 183; or permission of the instructor. The application of thermodynamics to the study of phase equilibria and transformations in metals; mechanism and rate determining factors in solid phase reactions in metals; order-disorder phenomena, diffusion processes, nucleation theory, precipitation from solid solution, eutectoid decomposition. (Moore.)

Met. 224, 225. Advanced X-ray Metallography (3, 3).

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Math. 114, 115; Met. 182, 183. Analysis of crystallography or martensite reactions, and transformations in general; analysis of complex diffracting systems. Laboratory fee, \$8.00 per semester.

Met. 228. Seminar in Metallurgy (1).

First and second semesters. One meeting a week. Required of graduate students in metallurgical curriculum. Survey of metals literature, and oral presentation of prepared reports. The content of this course is constantly changing, so a student may receive a number of credits by re-registration. (Pennington.)

Met. 229. Gases in Metals (2).

Second semester. Two lectures per week. Prerequisites, Met. 182, 183, or permission of the instructor. A consideration of the behavior of gases in metals with emphasis on the action of hydrogen in solid metals. (Pennington.)

Met. 230, 231. Mechanical Metallurgy (3, 3).

First and second semesters. Three lectures a week. Prerequisites, Math. 114, 115; Met. 182, 183. Theory of plastic flow and rupture of polycrystalline metals; the influence of combined stresses, rate of deformation and temperature variation on the flow and rupture of metals. Flow and fracture in single crystals; theoretical crystal plasticity, theory of failure, recovery, recrystallization, and texture formation. (Moore.)

Met. 232, 233. Advanced Physical Metallurgy (3, 3).

First and second semesters. Three lectures a week. Required of graduate students in metallurgical curriculum. The principles of X-ray metallography; the atomic theory of metals; magnetic materials; phase equilibria; review of important binary and ternary systems; diffusion and transformations in the solid state. (Offered off-campus.) (Loring.)

CIVIL ENGINEERING

Professors Steinberg, Allen, Otts; Lecturer Walker; Associate Professors Barber, Blackburn, Cournyn, Gohr, Wedding; Assistant Professor Piper; Instructors Luce, Garber

C. E. 50. Fluid Mechanics (3).

First or second semesters. Two lectures and one laboratory period a week. Prerequisite, Mech. 1. Required of juniors in civil and electrical engineering. A rational and experimental study of fluids at rest and in motion with special emphasis on water and oils. Principles of viscous and turbulent flow through pipes, orifices, nozzles and metering devices; impulse and momentum concepts. Flow through closed conduits and open channels; divided flow, pumps, turbines, dimensional analysis; laws of similarity. (Cournyn.)

For Advanced Undergraduates and Graduates**C. E. 100. Theory of Structures (4).**

Second semester. Three lectures and one laboratory period a week. Prerequisite, Mech. 50. Analytic and graphical determination of dead and live load stresses in beams and framed structures; influence lines; lateral bracing and portals; elements of slope and deflection. (Piper.)

C. E. 101. Soil Mechanics (3).

First semester. Two lectures and one laboratory period a week. Prerequisites, Mech. 50 and 53. An introductory study of the properties and behavior of soils as engineering materials. Soil physics, soil mechanics, and applications to engineering. (Barber.)

C. E. 102. Structural Design (4).

First semester. Five lectures and one laboratory period a week. Prerequisite, C. E. 100. Design and detailing of wood and metal structural members and their connections; wind stresses in building frames; structural framework. (Allen.)

C. E. 103. Concrete Design (4).

Second semester. Five lectures and one laboratory period a week. Prerequisite, C. E. 100. Design and detailing of plain and reinforced concrete structures, applications of slope-deflection and moment distribution theories; rigid frames. (Allen.)

C. E. 104. Water Supply (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, C. E. 50 and senior standing. Requirements of a municipal water supply—design, operation, maintenance, and administration. (Otts.)

C. E. 105. Sewerage (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, C. E. 50 and senior standing. The collection, treatment and disposal of sewage. (Otts.)

C. E. 106. Elements of Highways (3).

Second semester. Two lectures and one laboratory period a week. Prerequisite, C. E. 101. Location, design, construction, and maintenance of roads and pavements. Laboratory problems and field inspection trips. (Barber.)

C. E. 107. Statically Indeterminate Structures (2).

Two lectures and one laboratory period a week, first and second semesters. Prerequisites, C. E. 100, or equivalent. A basic course in statically indeterminate structures. (Allen, Piper.)

C. E. 108. Photogrammetry (3).

First or second semester. Two lectures and one laboratory period a week. Prerequisite, Surv. 50. The fundamental principles of terrestrial and aerial photographic surveying and their application to principles of map making. Laboratory exercises in the use of the stereoscope, stereocomparagraph, contour finder, interpretometer, and the vertical sketchmaster. (Gohr.)

C. E. 109. Hydrology (3).

First or second semester. Two lectures and one laboratory period a week. Prerequisite, C. E. 50. A study of the factors governing the supply of ground water and the flow of streams and their relations to water power, water supply, drainage and sanitary engineering. (Courayn.)

For Graduates**C. E. 200. Advanced Properties of Materials (3).**

First or second semester. Prerequisite, Mech. 53 or equivalent. A critical study of elastic and plastic properties, flow of materials, resistance to failure by fracture, impact, and corrosion, the theories of failure. Assigned reading from current literature. (Wedding.)

C. E. 201. Advanced Strength of Materials (3).

First or second semester. Prerequisite, Mech. 50, or equivalent. Special problems in engineering stress analysis. Limitations of flexure and torsion formulas, unsymmetrical bending, curved beams, combined stresses, thin tubes, thick-walled cylinders and flat plates. (Wedding.)

C. E. 202. Experimental Stress Analysis (3).

First or second semester. Prerequisite, C. E. 201 or permission of instructor. An

introduction to the theory of elasticity. Applications of this theory to experimental methods of stress analysis with particular reference to the electric strain gauge, strain rosettes, photoelastic methods, brittle lacquer technique and various analogy methods.
(Wedding.)

C. E. 203. Soil Mechanics (3).

First or second semester. Prerequisite, C. E. 101, or equivalent. A detailed study of the properties of engineering soils. Assigned reading from current literature.
(Barber, Blackburn)

C. E. 204. Advanced Foundations (3).

First or second semester. Prerequisites, C. E. 101, 102 and 103, or equivalent. A detailed study of types of foundations. Design and construction to meet varying soil conditions.
(Barber.)

C. E. 205. Highway Engineering (3).

First or second semester. Prerequisite, C. E. 106, or equivalent. An intensive course in the location, design, and construction of highways.
(Barber.)

C. E. 206. Theory of Concrete Mixtures (3, 3).

First and second semesters. Prerequisite, Mech. 53, or equivalent. A thorough review of the methods for the design of concrete mixtures, followed by a study of factors affecting the properties of the resulting concrete. This course is intended as a background for work in the field of concrete, concrete aggregates, or reinforced concrete. The second semester of this course is open only to students who are majoring in concrete.
(Blackburn, Wedding.)

C. E. 207. Advanced Structural Analysis (3).

First or second semester. Prerequisites, C. E. 107 or equivalent. Classical and modern methods of analysis of the more advanced statically indeterminate structures.
(Staff.)

C. E. 208. Advanced Sanitation (3).

First or second semester. A detailed study of environment and its relations to disease, covering malaria and its control; rodent control; food sanitation; collection and disposal of municipal refuse; housing sanitation, including plumbing, rat-proofing, etc.; rural water supply and excreta disposal; sanitary inspection procedure.
(Otts.)

C. E. 209. Advanced Water Supply (3).

First or second semester. Prerequisite, C. E. 104 or equivalent. A detailed study of the problems of water supply including recent developments in the treatment of water.
(Otts.)

C. E. 210. Advanced Sewerage (3).

First or second semester. Prerequisite, C. E. 105 or equivalent. A detailed study of the problems of sewerage, including recent developments in the treatment of sewage.
(Otts.)

C. E. 211. Sanitary Engineering Design (3).

First or second semester. Prerequisite, C. E. 104, 105 or equivalent. Practical problems in the design of sewer systems and appurtenances; sewage treatment plants; water collection and distribution systems; water purification plants. (Otts.)

C. E. 212. Research.

Credit in accordance with work done. First and second semesters. (Staff.)

C. E. 213. Seminar.

First or second semester. Credit in accordance with work outlined by the civil engineering staff. Prerequisite, graduate standing in civil engineering. (Staff.)

C. E. 214. Sanitary Engineering Laboratory (3).

First or second semester. Prerequisites, C. E. 104 and C. E. 105, or equivalent. Lectures, conferences, assigned readings, and laboratory exercises in the technique and principles involved in the physical, bacteriological and chemical tests used in water analysis. (Otts.)

C. E. 215. Sanitary Engineering Laboratory (3).

First or second semester. Prerequisites, C. E. 104, and C. E. 105, or equivalent. Lectures, conferences, assigned readings, and laboratory exercises in the techniques and principles involved in the physical, bacteriological and chemical tests used in sewage and industrial waste analysis. (Otts.)

C. E. 216. Hydraulic Engineering (3).

First or second semester. Prerequisite, C. E. 50, or equivalent. Water power and flood control. Analysis of the principal features of a water power project with special reference to reservoir, waterway, dam, plant accessories, and power house equipment. Complete report on a water power project required, including costs and power valuation. (Cournyn.)

C. E. 217. Hydraulic Machinery (3).

First or second semester. Prerequisite, C. E. 50, or equivalent. Principles of design, selection and operation of hydraulic pumps, turbines and other hydraulic machinery. (Cournyn.)

C. E. 218. Advanced Structural Design (3).

First or second semester. Prerequisites, C. E. 102, 103 or equivalent. Design problems encountered in rigid frames under vertical load. Design problems encountered in frames under horizontal load, with particular reference to wind loads. Design of radio towers and of industrial buildings. (Staff.)

C. E. 219. Sanitary Engineering Design (3).

First or second semester. Prerequisite, C. E. 104, 105 or equivalent. Selected problems in the design of structure related to the operation of water supply and sewerage systems and industrial waste treatment plants. (Otts.)

C. E. 220. Soil Mechanics Laboratory (3).

First or second semester. Prerequisite, C. E. 101 or equivalent. Detailed study and practice of standard and special laboratory test methods. Construction and operation of models. Application of tests to design and construction projects and research problems. (Barber.)

DRAWING**Dr. 1, 2. Engineering Drawing (2, 2).**

First and second semesters. Two laboratories a week. Required of engineering freshmen. Lettering, use of instruments, orthographic projection, auxiliary views, revolution, sections, pictorial representation, dimensioning, fasteners, technical sketching, and working drawings. (Wockenfuss and Staff.)

Dr. 3. Advanced Engineering Drawing (2).

First semester. Two laboratories a week. Required of juniors in Civil Engineering. Prerequisites, Dr. 1 and Dr. 2. Descriptive Geometry with applications to drafting room problems. Developments, intersections, transition pieces and perspective. (Wockenfuss and Staff.)

ELECTRICAL ENGINEERING

Professors Corcoran, Reed, and Weber; Associate Professors Hodgins, Wagner, Small, and Price; Assistant Professors Hochuli and Simons; Instructor Lundquist; Lecturers Ahrendt, Chu, Freeman, Vanderslice, and Schulman.

E. E. 1. Basic Electrical Engineering (4).

Second semester. Three lectures and one laboratory period a week. Laboratory fee, \$4.00. Prerequisites, Math. 21 and Phys. 21 or concurrent registration. Required of sophomores in electrical engineering. Basic concepts of electric potential, current, power, and energy; d-c circuit analysis by the mesh-current and nodal methods; network theorems; magnetic field concepts; magnetic effects of engineering importance. (Corcoran, Simons.)

For Advanced Undergraduates**E. E. 50. Fundamentals of Electrical Engineering (3).**

First semester. Two lectures and one laboratory period a week. Laboratory fee, \$4.00. Prerequisites, Math. 21 and Phys. 21. Required of juniors in civil engineering. Principles of direct and alternating currents; power circuits and distribution systems; direct and alternating current machines and applications; operating characteristics of electrical machines and transformers. (Hodgins, Hochuli.)

E. E. 51, 52. Principles of Electrical Engineering (4, 4).

First and second semesters. Three lectures and one laboratory period a week. Laboratory fee, \$4.00. Prerequisites, Math. 21 and Phys. 21. Required of juniors in aeronautical and mechanical engineering, and seniors in chemical engineering. A study of elementary direct-current and alternating-current circuits, polyphase circuits; magnetic

circuits. Principles of operation of direct and alternating current machinery and transformers. Brief study of vacuum tubes operated as rectifiers and amplifiers.

(Small, Lundquist.)

E. E. 60. Electricity and Magnetism (3).

First semester. Prerequisites, Math. 21, Phys. 21, and E. E. 1. Required of juniors in electrical engineering. Electromagnetism as applied to electrical engineering; electric field theory with emphasis on capacitance calculations, magnetic field theory with emphasis on inductance calculations; boundary layer phenomena.

(Reed, Weber.)

E. E. 65. Direct-Current Machinery (3).

Second semester. Two lectures and one laboratory period a week. Laboratory fee, \$4.00. Prerequisites, Math. 21, Phys. 21, and E. E. 1. Required of juniors in electrical engineering. Construction, theory of operation, and performance characteristics of direct-current generators, motors, and control apparatus. Experiments on the operation and characteristics of direct-current generators and motors.

(Hodgins, Hochull.)

For Advanced Undergraduates and Graduates

E. E. 100. Alternating-Current Circuits (4).

First semester. Three lectures and one laboratory period a week. Laboratory fee, \$4.00. Prerequisites, Math. 21, Phys. 21, and E. E. 1. Required of juniors in electrical engineering. Single- and polyphase-circuit analysis under sinusoidal and non-sinusoidal conditions of operation. Mesh-current and nodal methods of analysis. Harmonic analysis by the Fournier series method. Theory and design of tuned coupled circuits.

(Price, Simons.)

E. E. 101. Engineering Electronics (5).

Second semester. Four lectures and one laboratory period a week. Laboratory fee, \$4.00. Prerequisite, E. E. 100. Required of juniors in electrical engineering. Theory and applications of electron tubes and associated circuits with emphasis on equivalent circuit analysis of audio amplifiers, reactance tubes, feedback amplifiers, oscillators, and detectors.

(Price, Simons.)

E. E. 102. Alternating-Current Machinery (4).

First semester. Three lectures and one laboratory period a week. Laboratory fee, \$4.00. Prerequisites, E. E. 65 and E. E. 100. Required of seniors in electrical engineering. The operating principles of alternating-current machinery considered from theoretical, design, and laboratory points of view. Synchronous generators and motors; single and polyphase transformers; three-phase induction generators and motors; single-phase induction motors; rotary converters and mercury-arc rectifiers.

(Hodgins.)

E. E. 104. Communication Circuits (4).

Second semester. Four lectures a week. Prerequisites, E. E. 60 and E. E. 100. Required of juniors in electrical engineering. Long-line theory applied to audio-frequency and ultra-high-frequency systems. Elements of filter theory; impedance matching; Maxwell's equations in rectangular and cylindrical coordinates and in scalar notation; elements of rectangular wave-guide theory.

(Reed, Simons.)

E. E. 105, 106. Radio Engineering (4, 4).

First and second semesters. Three lectures and one laboratory period a week. Laboratory fee, \$4.00. Prerequisite, E. E. 101. E. E. 105 is required of seniors in electrical engineering. Characteristics of radio-frequency circuits including the design of tuned coupled circuits and Class C amplifiers. Amplification, oscillation, modulation, and detection with particular emphasis on radio-frequency amplification and broadcast-range reception. Elements of wave propagation and antenna systems. (Wagner, Price.)

E. E. 107. Electrical Measurements (4).

Second semester. Three lectures and one laboratory period a week. Laboratory fee, \$4.00. Prerequisites, E. E. 100 and Math. 64. Measurement and calibration techniques employing ballistic galvanometers, potentiometers, bridges, electromagnetic and cathode-ray oscillographs, watt-hour meters, and electronic instruments. (Small.)

E. E. 108. Electric Transients (3).

First semester. Three lectures a week. Prerequisite, E. E. 101, Math. 64. Required of seniors in electrical engineering. Current, Voltage, and power transients in lumped-parameter networks. Introduction and utilization of Laplace transforms. (Price, Simons.)

E. E. 109. Pulse Techniques (3).

Second semester. Three lectures a week. Prerequisites, E. E. 101 and Math. 64. Required of seniors in electrical engineering. Generation, shaping, amplification, and delay of non-sinusoidal wave-forms. Circuit design techniques and application to radar, television, and computers. (Simons, Schuman.)

E. E. 110. Transistor Circuitry (3).

Second semester. Three lectures a week. Prerequisite, E. E. 101. P-n junction theory; point-contact and junction type transistors; transistor parameters; equivalent circuits; typical transistor amplifier and oscillator circuits. (Corcoran, Reed.)

E. E. 114. Applied Electronics (3).

First or second semester. Three lectures a week. Prerequisite, E. E. 101. Detectors and discriminators; gas tube characteristics and associated circuits; photoelectric tubes and associated circuits; rectifiers and regulators; vacuum tube instruments. (Staff.)

E. E. 115. Feedback Control Systems (3).

Second semester. Two lectures and one laboratory period a week. Laboratory fee, \$4.00. Prerequisites, E. E. 101 and E. E. 108. Servomechanisms and automatic regulators; investigations of electric, hydraulic, pneumatic, and mechanical elements; analysis of system differential equations and development of transfer functions; stability criteria. (Price.)

E. E. 116. Alternating-Current Machinery Design (3).

Second semester. Two lectures and one calculation period a week. Prerequisite, E. E. 102. Derivation of theoretical design equations; practical design consideration; numerical design of transformers, synchronous generators and induction motors. (Reed.)

E. E. 117. Power Transmission and Distribution (3).

First semester. Three lectures a week. Prerequisite, concurrent registration in E. E. 102. Inductance and capacitance calculations of polyphase transmission lines on a per wire basis; effective resistance calculations and depth-of-penetration formula; generalized parameters of four-terminal networks and long-line theory applied to power distribution systems; use of transmission line charts. (Reed.)

E. E. 120. Electromagnetic Waves (3).

Second semester. Three lectures a week. Prerequisites, Math. 64, senior standing in electrical engineering or physics. The basic mathematical theory of electromagnetic wave propagation employing Maxwell's equations in scalar and vector form and in generalized coordinates; application to wave-guide transmission. (Reed.)

E. E. 130. Electronic Analog Computers (3).

First semester. Three lectures a week. Prerequisites, E. E. 101 and Math. 64. Principles of electronic computers of the analog type. Analog computing components, operational amplifiers, d-c amplifiers, instrument servos, multipliers, and function generators. (Chu.)

E. E. 131. Electronic Digital Computers (3).

Second semester. Three lectures a week. Prerequisites, E. E. 101 and Math. 64. Principles of electronic computers of the digital type. Digital computing operations, basic computing and control circuits, logical design, arithmetic unit, memory systems, and control units. (Chu.)

E. E. 160, 161. Vacuum Tubes (3, 3).

First and second semesters. Three lectures a week. Prerequisites, Math. 64, senior standing in electrical engineering or physics. Electron emission; laws of electron motion; space charge effects; noise in vacuum tubes; magnetic lenses; klystrons; magnetrons; photoelectric tubes; other special-purpose tubes. (Weber.)

For Graduates**E. E. 200. Symmetrical Components (3).**

First semester. Three lectures a week. Prerequisite, E. E. 102. Application of the method of symmetrical components to synchronous generators, transmission lines, transformers, static loads possessing mutual coupling, and induction motor loads. Methods of calculating positive, negative, and zero sequence reactances of transmission lines. Complete network solutions in terms of symmetrical components and comparison of these solutions with those obtained by classical methods. Methods of measuring positive, negative, and zero sequence reactances of synchronous generators. (Reed.)

E. E. 201. Electromagnetic Theory (3).

Second semester. Three lectures a week. Prerequisite, E. E. 120 or E. E. 215. Theoretical analysis and engineering applications of Laplace's, Poisson's and Maxwell's equations. (Weber.)

E. E. 202, 203. Transients in Linear Systems (3, 3).

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical or mechanical engineering or physics. Operational circuit analysis;

the Fourier integral; transient analysis of electrical and mechanical systems and vacuum tube circuits by the Laplace transform method. (Wagner.)

E. E. 206, 207. Microwave Engineering (3, 3).

First and second semesters. Three lectures a week first semester and two lectures and one laboratory period a week second semester. Laboratory fee, E. E. 207, second semester, \$4.00. Prerequisite, E. E. 201 or E. E. 216. Basic considerations in solving field problems by differential equations; circuit concepts and their validity at high frequency; propagation and reflection of electromagnetic waves; guided electromagnetic waves; high-frequency oscillators and tubes; radiation engineering. (Weber.)

E. E. 209. Stability in Power Systems (3).

Second semester. Three lectures a week. Prerequisites, E. E. 200. An extension of symmetrical components, E. E. 200, as applied to power systems; study of the stability problem; the swing equation and its solution; the equal-area and Routh's criteria for stability; solutions of faulted three-phase networks; system design. (Reed.)

E. E. 212, 213. Servomechanisms (3, 3).

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical or mechanical engineering or physics. (It is desirable that the student should have had E. E. 202.). The design and analysis of regulatory systems, emphasizing servo-mechanisms. Regulatory systems are analyzed by means of the governing differential equations to provide background for more practical studies of frequency spectrum analysis. Characteristics of actual systems and practical considerations are studied. (Price, Ahrendt.)

E. E. 215, 216. Radio Wave Propagation (3, 3).

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical engineering, physics, or mathematics. Required of M.S. degree candidates in electrical engineering. Maxwell's wave equation; concept of retarded magnetic vector potential; propagation over plane earth; propagation over spherical earth; refraction: meteorological effects; complex antennas; air-to-air propagation; lobe modulation. (Reed.)

E. E. 218, 219. Signal Analysis and Noise (3, 3).

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical engineering or physics. Fourier series and integrals; phase and frequency modulation; noise figures of linear systems; shot effect; power spectra; applications of correlation function; properties of noise. (Freeman.)

E. E. 220, 221. Theory of Communication (3, 3).

First and second semesters. Three lectures a week. Prerequisite, E. E. 219. Measure of information and channel capacity; methods of describing random signals and circuit analysis involving those signals. The statistical theory of communication systems. Systems which are statistically optimum. (Weber, Freeman.)

E. E. 222. Graduate Seminar (1).

Second semester. Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Seminars are held on topics such as micro-wave engineering, radiation engineering, non-linear circuit analy-

sis, tensor analysis, and other topics of current interest. Since the subject matter is continually changing, a student may receive a number of credits by registering.

(Corcoran, Reed, Weber and Wagner.)

E. E. 230. Mathematics of Circuit Analysis.

First semester. Three lectures a week. Prerequisite, undergraduate major in electrical engineering or physics. The mathematics of circuit analysis, including determinants, matrices, complex variable, and the Fourier integral. (Vanderslice.)

E. E. 231. Active Network Analysis (3).

Second semester. Three lectures a week. Prerequisite, E. E. 230. The complex frequency plane; conventional feedback amplifier theory; Bode's mathematical definitions of feedback and sensitivity; theorems for feedback circuits; stability and physical realizability of electrical networks; Nyquist's and Routh's criteria for stability.

(Corcoran, Vanderslice.)

E. E. 232, 233. Network Synthesis (3, 3).

First and second semesters. Three lectures a week. Prerequisite, E. E. 231 or equivalent. Design of driving-point and transfer impedance functions with emphasis on the transfer loss and phase of minimum-phase networks; flow diagrams; physical network characteristics, including relations existing between the real and imaginary components of network functions; modern methods of network synthesis. (Vanderslice.)

E. E. 235. Applications of Tensor Analysis (3).

First semester. Three lectures a week. Prerequisite, E. E. 202 or E. E. 230. The mathematical background of tensor notation which is applicable to electrical engineering problems. Applications of tensor analysis to electric circuit theory and to field theory.

(Wagner.)

E. E. 250. Electrical Engineering Research.

Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Six semester hours of credit in E. E. 250 are required of M.S. degree candidates and a minimum of eighteen semester hours is required of Ph.D. candidates. A thesis covering an approved research problem and written in conformity with the regulations of the Graduate School is a partial requirement for either the degree of Master of Science or the degree of Doctor of Philosophy in electrical engineering. (Graduate Staff.)

GENERAL ENGINEERING SUBJECTS

For Advanced Undergraduates and Graduates

Engr. 100. Engineering Contracts and Specifications (2).

Second semester. Prerequisite, senior standing in engineering. The fundamental principles of law relating to business and to engineering and their application to engineering contracts and specifications. Professional ethics. (Lundquist.)

MECHANICAL ENGINEERING

Professors Younger, Shreeve, Jackson, Long; Associate Professors Allen, Hayleck, Eyler; Assistant Professors Hennick, Wockenfuss, Cather, Sayre; Instructors Hurlbrink, Elkins, Shippling, Swearman, Hanley

For Advanced Undergraduates

M. E. 50. Principles of Mechanical Engineering (3).

Second semester. Two lectures and one laboratory period a week. Prerequisites Phys. 21, and Math. 21. Required of juniors in Civil Engineering. Elementary thermodynamics and the study of heat, fuel and combustion in the production and use of steam for generation of power. Supplemented by laboratory tests and trips to industrial plants. (Cather, Sayre.)

M. E. 51. Thermodynamics (4).

First semester. Three lectures and one laboratory period a week. Prerequisites, Math. 21, Phys. 21. Required of seniors in Electrical Engineering. The properties, characteristics, and fundamental equations of gases and vapors. An analysis of basic heat engine, air compression, refrigeration, and vapor cycles. Flow and non-flow processes for gases and vapors. Theory supplemented by laboratory tests. Laboratory fee, \$3.00 per semester. (Cather.)

M. E. 52. Power Plants (4).

Second semester. Three lectures and one laboratory period a week. Required of seniors in Electrical Engineering. Prerequisite, M. E. 51. The study of power plant cycles using as heat sources nuclear reactors, solid, liquid and gaseous fuels. Includes analysis and design of such equipment as: reactors, boilers, turbines, regenerators and their accessories. Laboratory fee, \$3.00 per semester. (Cather.)

M. E. 53. Metallography (3).

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, to be taken concurrently with Mech. 52. A study of the structure of metals and alloys as related to their properties. Study of crystallization, plastic deformation, constitution diagrams, manufacturing processes, heat treatment and effect of alloying elements on ferrous and non-ferrous materials. Laboratory work in thermal analysis, microscopy, heat treatment and testing of metals (Jackson, Eyler.)

M. E. 54. Fluid Mechanics (3).

Second semester. Two lectures and one laboratory period a week. Prerequisites, Mech. 2; M. E. 100, concurrently. A study of fluids under all possible conditions of rest and motion. The approach is analytical, rational, and mathematical rather than empirical. Applications to turbine and centrifugal pump design and flow of gases. Laboratory fee, \$3.00 per semester. (Sayre.)

For Advanced Undergraduates and Graduates

M. E. 100. Thermodynamics (3).

First semester. Two lectures and one laboratory period a week. Prerequisites, Phys. 20; Math. 21, concurrently. Required of juniors in Mechanical and Aeronautical Engineering. The properties, characteristics, and fundamental equations of gases, and vapors. Application of the 1st and 2nd Laws of Thermodynamics in the analysis of basic heat engines, air compression, and vapor cycles. Flow and non-flow processes for gases and vapors. (Eyler, Sayre.)

M. E. 101. Heat Transfer (2).

First semester. Two lectures a week. Prerequisite, M. E. 100; M. E. 54, concur-

rently. Required of seniors in Mechanical Engineering. Basic principles of heat transfer including a study of conduction by steady state and variable heat flow, free and forced convection, radiation, evaporation and condensation of vapors, and the application of the principles of heat transfer to design problems. (Eyler.)

M. E. 102. Heating and Air Conditioning (3).

Second semester. Two lectures and one laboratory period a week. Prerequisites, M. E. 100; M. E. 101, concurrently. Required of seniors in Mechanical Engineering. The fundamentals of heating and cooling load computations. Basic information on heating and air conditioning systems for residential and industrial use. (Allen, Eyler.)

M. E. 103. Refrigeration (3).

First semester. Two lectures and one laboratory period a week. Prerequisites, M. E. 100; M. E. 101, M. E. 54, concurrently. Required of seniors in Mechanical Engineering. Thermodynamic analysis of air, vapor compression, absorption and water refrigeration systems. Characteristics of refrigerants. Study of refrigeration as applied to cooling and dehumidification in air conditioning. Low temperature refrigeration, the heat pump, and other special topics. Laboratory fee, \$3.00 per semester. (Allen, Eyler.)

M. E. 104, 105. Prime Movers (4, 4).

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, M. E. 100; M. E. 54, concurrently. Required of seniors in Mechanical Engineering. The study of all types of power plants including internal combustion engines, gas turbines and steam stations; using all types of heat sources including nuclear reactors, solid, liquid and gaseous fuels. Includes the study of such cycles as Otto, Diesel, Brayton and Rankine. Analysis and design of various components such as: reactors, regenerators, turbines, compressors, boilers and condensers. (Shreeve, Cather.)

M. E. 106, 107. Mechanical Engineering Design (4, 4).

First and second semesters. Two lectures and two laboratory periods a week. Prerequisites, Mech. 52; M. E. 53 for 107. A study of velocity, acceleration and displacement of linkages; cam motions and design; statics, inertia and friction forces in machines; gears and miscellaneous motions. Study of stresses and strains in machine parts; design of machine members including fastenings, hoisting and power transmission devices, cylinders, springs, shafts, bearings; introduction to mechanical vibrations. Design of a complete machine. (Jackson, Long, Hayleck.)

M. E. 108, 109. Mechanical Laboratory (2, 2).

First and second semesters. One lecture and one laboratory period a week. Prerequisite, senior standing. Required of seniors in Mechanical Engineering. Experiments on fuels and lubricants, steam engine and turbines, air compressors, gasoline and diesel engines and various other mechanical equipment. Written reports are required on all tests. Laboratory fee, \$3.00 per semester. (Staff.)

M. E. 110. Applied Elasticity (3).

First semester. Three lectures a week. Advanced strength of materials involving beam problems, curved bars, flat plates, shells, statically indeterminate structures. Methods of work and energy. Prerequisites, Mech. 2, Mech. 52; Math. 64, concurrently. (Younger, Long.)

M. E. 111. Dynamics (3).

Second semester. Three lectures a week. Linear, plane, and three dimensional motion, moving axes, balancing, vibration, gyroscope, etc. Prerequisites, Mech. 2, Mech. 52; Math. 64, concurrently. (Younger, Long.)

For Graduates**M. E. 200, 201. Advanced Dynamics (3, 3).**

First and second semesters. Prerequisites Mech. 52, Math. 64, M. E. 107, M. E. 109. Mechanics of machinery. Dynamic forces. Balancing of rotating parts. Vibrations and vibration damping. Critical speeds. (Younger, Long.)

M. E. 202, 203. Applied Elasticity (3, 3).

First and second semesters. Prerequisites, Mech. 52, Math. 64, M. E. 107. Advanced methods in structural and experimental stress analysis. Advanced strength of materials involving beam problems, curved bars, thin plates and shells, buckling of bars, plates and shells, etc. Advanced work in stress concentrations, plastic deformations, etc., and problems involving instability of structures. (Younger, Long.)

M. E. 204, 205. Advanced Thermodynamics (3, 3).

First and second semesters. Three lectures a week. Prerequisites, M. E. 101, M. E. 104, M. E. 105, Math. 64. Advanced problems in thermodynamics on compression of gases and liquids, combustion and equilibrium, humidification and refrigeration and availability. Problems in advanced heat transfer covering the effect of radiation, conduction, and convection, steady and unsteady flow, evaporation and condensation. (Shreeve, Allen.)

M. E. 206, 207. Advanced Machine Design (3, 3).

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, Math. 64, M. E. 107. Application of advanced methods of stress analysis to design of special stationary and moving machine parts, including rotating disks, bearings, thick wall cylinders, screw fastenings, crankshafts, etc. Application of linear and torsional vibration and balancing in the design of machine members. Complete design of a machine. Study of current design literature. (Jackson.)

M. E. 208, 209. Steam Power Design (3, 3).

First and second semesters. One lecture and two laboratory periods a week. Prerequisite, M. E. 105. Design and specifications of power plants with special emphasis on central stations heated by conventional fuels and nuclear reactors. Design of all components including turbines, boilers, and reactors. Problems of water treatment and waste disposal (atomic and ash) are considered. (Shreeve.)

M. E. 210, 211. Advanced Fluid Mechanics (3, 3).

First and second semesters. Prerequisites, M. E. 54, Math. 64. Advanced theory of the flow of fluids and gases. Hydrodynamic theory. Engineering applications. (Sayre.)

M. E. 212, 213. Advanced Steam Power Laboratory (2, 2).

First and second semesters. One lecture and one laboratory period a week. Prerequisite, registration in M. E. 204, 205. Research on advanced steam power problems to illustrate and advance steam power theory. Power plant heat balances. (Shreeve.)

M. E. 214, 215. Advanced Applied Mechanics Laboratory (2, 2).

First and second semesters. One lecture and one laboratory period a week. Prerequisites, registration in M. E. 200, 201 and M. E. 202, 203. Illustrative experiments and research on difficult problems in stress analysis. Photoelasticity. Mechanical vibrations. Critical speeds. Dynamic stresses. Fatigue of materials. (Long.)

M. E. 216, 217. Advanced Internal Combustion Engine Design (3, 3).

First and second semesters. One lecture and two laboratory periods a week. Prerequisites, M. E. 104, 105; M. E. 106, 107 and registration in M. E. 200, 201 and M. E. 204, 205. Each student will carry out complete designs of internal combustion engines. (Shreeve.)

M. E. 218, 219. Advanced Internal Combustion Engine Laboratory (2, 2).

First and second semesters. One lecture and one laboratory period a week. Prerequisite, registration in M. E. 216, 217. Advanced laboratory tests and problems in the design of internal combustion engines. (Shreeve.)

M. E. 220. Seminar.

Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering. (Staff.)

M. E. 221. Research.

Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering. Research in any field of mechanical engineering as applied mechanics, heat transfer, thermodynamics, heat, power, etc. (Staff.)

M. E. 222. Advanced Metallography (3).

First semester. Two lectures and one laboratory period a week. Prerequisite, M. E. 53, Mech. 52. Advanced study of the structure and properties of metals and alloys. Study of the latest developments in ferrous and non-ferrous alloys including stainless steels, high temperature steels, tool steels, aluminum, magnesium and copper alloys. Study of inspection of metals by the use of X-Rays, spectograph, metallograph and magniflux. Review of current literature. (Jackson.)

M. E. 223, 224. Steam and Gas Turbine Design (3, 3).

First and second semesters. Three lectures a week. Prerequisites, M. E. 101, M. E. 104, M. E. 105, Math. 64. Study of nozzles and blades, with application to all types of turbines and compressors based on detailed heat calculations. Design of regenerators and combustors for gas turbines. Applications to jet propulsion. Fundamentals of rocket, pulse jet and ram jet design. (Shreeve.)

M. E. 225, 226. Advanced Properties of Metals and Alloys (2, 2).

First and second semesters. Two lectures a week. Prerequisite, Mech. 52, M. E. 53, M. E. 106, M. E. 107. Properties of metals including tensile, impact, fatigue, damping capacity, hardenability, wear, etc. Fabrication problems and selection of metals and alloys. Service failures. Properties required for nuclear engineering applications. Properties of metals at elevated and extremely low temperatures. (Jackson.)

M. E. 227, 228. Theory of Elasticity (3, 3).

First and second semesters. Three lectures a week. Prerequisites, M. E. 202, 203. Stress and strain at a point. Relation between stresses and strains, general equations of elasticity, plane strain and plane stress, torsion, bending, axially symmetric distribution of stress, plates, thermal stresses, strain energy and approximate methods.

(Younger, Long.)

M. E. 229, 230. Jet Propulsion (3, 3).

First and second semesters. Three lectures a week. Prerequisites, M. E. 101, M. E. 104, M. E. 105. Types of thermal jet units. Fluid reaction and propulsive efficiency. Performance of rockets, aerothermodynamics, combustion chemical kinetics, aerodynamics of high speed air flow. Principles and design of solid and liquid propellant rockets. Design of turbojets and aerjets, ramjets and hydroduct units, including combustion chambers, turbines and compressor.

(Shreeve.)

M. E. 231, 232. Advanced Heat Transfer (3, 3).

First and second semesters. Three lectures a week. Prerequisites, M. E. 101, M. E. 102, M. E. 105. Advanced problems covering effects of radiation, conduction, convection, evaporation and condensation. Study of research literature on heat transfer.

(Shreeve, Allen.)

M. E. 233, 234. Compressible Flow (3, 3).

First and second semesters. Three lectures a week. Prerequisites, M. E. 210, 211 or equivalent. One and two dimensional subsonic, transonic, and supersonic flow.

(Sayre.)

Mechanical Engineering Shop**Shop 1. Machine Shop Practice (2).**

First semester. One lecture and one laboratory period a week. Required of sophomores in Aeronautical and Mechanical Engineering. Study and practice of fundamental principles of machine tools. Laboratory fee, \$3.00 per semester. (Hennick, Wockenfuss.)

Shop 2. Machine Shop Practice (1).

Second semester. One laboratory period a week. Prerequisite, Shop 1. Required of sophomores in Aeronautical and in Mechanical Engineering. Laboratory fee, \$3.00 per semester. Advanced practice with standard machine tools. Exercises in thread cutting, fluting, cutting spur and helical gears, jig work, and cutter and surface grinding.

(Hennick, Wockenfuss.)

Shop 3. Manufacturing Processes (1).

Second semester. One combination lecture and laboratory period a week. Required of sophomores in Aeronautical and in Mechanical Engineering. A study of different methods used in industry to fabricate materials of engineering. Sand casting, metal molds, centrifugal casting, lost wax process, extrusion, spinning, powder metallurgy, molded plastics, welding, forging drawing, pressing and rolling.

(Hennick, Wockenfuss.)

MECHANICS

Mech. 1. Statics and Dynamics (3).

Second semester. Taken concurrently with Math. 21, and Phys. 21. Solutions of force systems; graphic statics; friction, centroids and moments of inertia; kinetics; work, power, energy, impulse and momentum. (Wedding, Staff.)

Mech. 2. Statics and Dynamics (5).

First semester. Prerequisites, Phys. 20, Math. 21, taken concurrently. Required of juniors in Mechanical and Aeronautical Engineering. Solution of force systems in stationary and moving bodies; study of the free body, graphical statics, three dimensional force systems, distributed forces, friction, centroids and moments of inertia; study of the dynamics of bodies including velocity, acceleration, translation, rotation, work and energy, impulse and momentum. (Younger, Hayleck.)

For Advanced Undergraduates**Mech. 50. Strength of Materials (4).**

First semester. Prerequisite, Math. 21 and Mech. 1, or equivalent. Required of juniors in civil engineering. Thin-walled cylinders, riveted and welded joints, torsion; stresses in beams; design of columns; use of structural steel handbook. Beam deflections; statically indeterminate beams; combined loadings; composite beams; impact and energy loadings. (Wedding.)

Mech. 51. Strength of Materials (3).

First semester. Prerequisite, Math. 21 and Mech. 1, or equivalent. Required of juniors in electrical and in chemical engineering. A shorter course than Mech. 50. (Wedding, Staff.)

Mech. 52. Strength of Materials (5).

Second semester. Prerequisite, Math. 21, Mech. 2. Required of juniors in Mechanical and Aeronautical Engineering. Study of the stresses and strains in members under various types of loadings including tension, compression, shear, torsion, bending and combined loads. Study of cylinders, joints, beams, statically indeterminate members, columns, curved bars and shafts. Work in strain energy methods, photoelastic theory, fatigue and strain hardening. (Younger, Hayleck.)

Mech. 53. Materials of Engineering (2).

Second semester. One lecture and one laboratory period a week. Prerequisite, Mech. 50 or taken concurrently with Mech. 50. The composition, manufacture, and properties of the principal materials used in engineering; performance of standard tests; interpretation of test results and of specifications. (Wedding.)

SURVEYING

Surv. 1. Elements of Plane Surveying (2).

First and second semesters. One lecture and one laboratory period a week. Prerequisite, Math. 18. Required of sophomores in civil and in mechanical engineering.

Theory and practice in the use of the tape, compass, transit, and level. General survey methods, traversing, areas, coordinates, profiles, cross-sections, volume, stadia.

(Gohr and Staff.)

For Advanced Undergraduates

Surv. 50. Advanced Surveying (4).

Second semester. Two lectures and two laboratory periods a week. Prerequisite, Surv. 1. Required of sophomores in civil engineering. Adjustment of instruments, latitude, longitude, azimuth, time, triangulation, precise leveling, geodetic surveying, together with the necessary adjustments and computations. Topographic surveys. Plane table, land surveys and boundaries. Mine, tunnel and hydrographic surveys. Aerial photography.

(Gohr, Staff.)

Surv. 100. Curves and Earthwork (3).

First semester. One lecture and two laboratory periods a week. Prerequisite, Surv. 50. Required of juniors in civil engineering. Computation and field work for simple, compound and reversed circular curves and spirals; parabolic curves; earthwork computations; complete survey and map, including mass diagram of a short route.

(Luce, Staff.)

FIRE PROTECTION

Professor Bryan

F. P. 1. Introduction to Fire Protection (0).

First semester. One lecture a week. An orientation course designed to give the students an insight into the fire protection profession. Discussion and examination of the related areas of specialization. The history and development of fire protection.

F. P. 13. Fire Causes and Hazards (3).

First semester. Two lectures and one laboratory period a week. A study of the chemistry of combustion, and an analysis of the properties of matter affecting fire behavior. Detailed examination of the basic and special fire causes and fire hazards.

F. P. 17, 18. Fire Inspection Practices and Methods (2, 2).

First and second semesters. One lecture and one laboratory period a week. A study of the techniques of the various types of fire inspections. Laboratory practice in the preparation of reports, maps, and diagrams. An examination of building codes and the theory of fire load rating.

F. P. 21, 22. Fire Protection Fundamentals (3, 3).

First and second semesters. Two lectures and one laboratory period a week. Design and installation requirements of fire extinguishers. Standards of types, installation, and maintenance of automatic sprinkler and fire alarm systems. The principles of fire extinguishment with laboratory and field tests.

For Advanced Undergraduates

F. P. 110. Fire Hydraulics Applications (2).

Second semester. One lecture and one laboratory period a week. A study of the properties of water. An evaluation of fire pumps, distribution systems, storage tanks, standpipes, and auxiliary equipment. Laboratory and field study of hydraulic problems.

F. P. 111. Industrial Fire Problems (3).

First semester. Two lectures and one laboratory period a week. An evaluation and consideration of the special hazards found in representative industries. A study of the problems associated with fire protection in industry, including employee organization, staff functions, and emergency planning.

F. P. 112. Tactics of Fire Control (3).

First semester. Two lectures and one laboratory period a week. An analysis of the theory of mutual aid, and the organization of control centers. A study of the principal factors involved in the strategy and utilization of men and equipment for fire extinguishment. An evaluation of the factors influencing principal fire losses. Laboratory and field observation and study of major fires.

F. P. 113. Principles of Fire Training (3).

Second semester. Two lectures and one laboratory period a week. A study of the objectives of training, psychology of learning, job analysis, lesson planning, training aids, and conference leadership.

F. P. 114. Arson (3).

Second semester. Two lectures and one laboratory period a week. A study of the fundamentals of effective investigation, and the organization of arson bureaus. An evaluation of present techniques concerning motives, interrogating suspects, and presenting the case. The study and examination of actual cases.

F. P. 115. Essentials of Fire Prevention (3).

Second semester. Two lectures and one laboratory period a week. A study of the organization and the administration of a fire prevention bureau. The techniques of fire prevention programs on a continuing basis. The staging of community fire prevention activities. The examination of effective fire prevention activities.

F. P. 117. Fire Service Organization (3).

First semester. Two lectures and one laboratory period a week. A study of the organization, administration and evaluation of municipal fire protection. Promotional and rating systems, recruiting practices, economics of operation. Requirements of governmental and insurance organizations.

F. P. 124, 125. Elements of Fire Protection (3, 3).

First and second semesters. Two lectures and one laboratory period a week. The evaluation and examination of fire loss records, and the economic aspect of fire protection. A study of the insurance grading and rating schedules and their principles of application. The examination of specific laws, codes, and ordinances for fire protection and life safety. A study of the theory of urban analysis.

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SEPARATE CATALOGS

At College Park

Individual catalogs of colleges and schools of the University of Maryland at College Park may be obtained by addressing the Office of University Relations, University of Maryland, College Park, Md.

These catalogs and schools are:

1. General Information
2. College of Agriculture
3. College of Arts and Sciences
4. College of Business and Public Administration
5. College of Education
6. College of Engineering
7. College of Home Economics
8. College of Military Science
9. College of Physical Education, Recreation and Health
10. College of Special and Continuation Studies
11. Summer School
12. Graduate School

At Baltimore

Individual catalogs for the professional schools of the University of Maryland may be obtained by addressing the Deans of the respective schools at the University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland. The professional schools are:

13. School of Dentistry
14. School of Law
15. School of Medicine
16. School of Pharmacy
17. School of Nursing

At Heidelberg

The catalog of the European Program may be obtained by addressing the Dean, College of Special and Continuation Studies, College Park, Maryland.

1957-1958



UNIVERSITY OF MARYLAND

THE COLLEGE OF

home economics

AT COLLEGE PARK



IMPORTANT

THE PROVISIONS of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

GENERAL INFORMATION

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, societies and special clubs, the University band, student publications, University Post Office and Supply Store, write to the Editor of Publications for the General Information issue of the Catalog.

See Outside Back Cover for List of Other Catalogs
Index on inside back cover.

Vol. 10

April 22, 1957

No. 2

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AND

MARYLAND STATE BOARD OF AGRICULTURE

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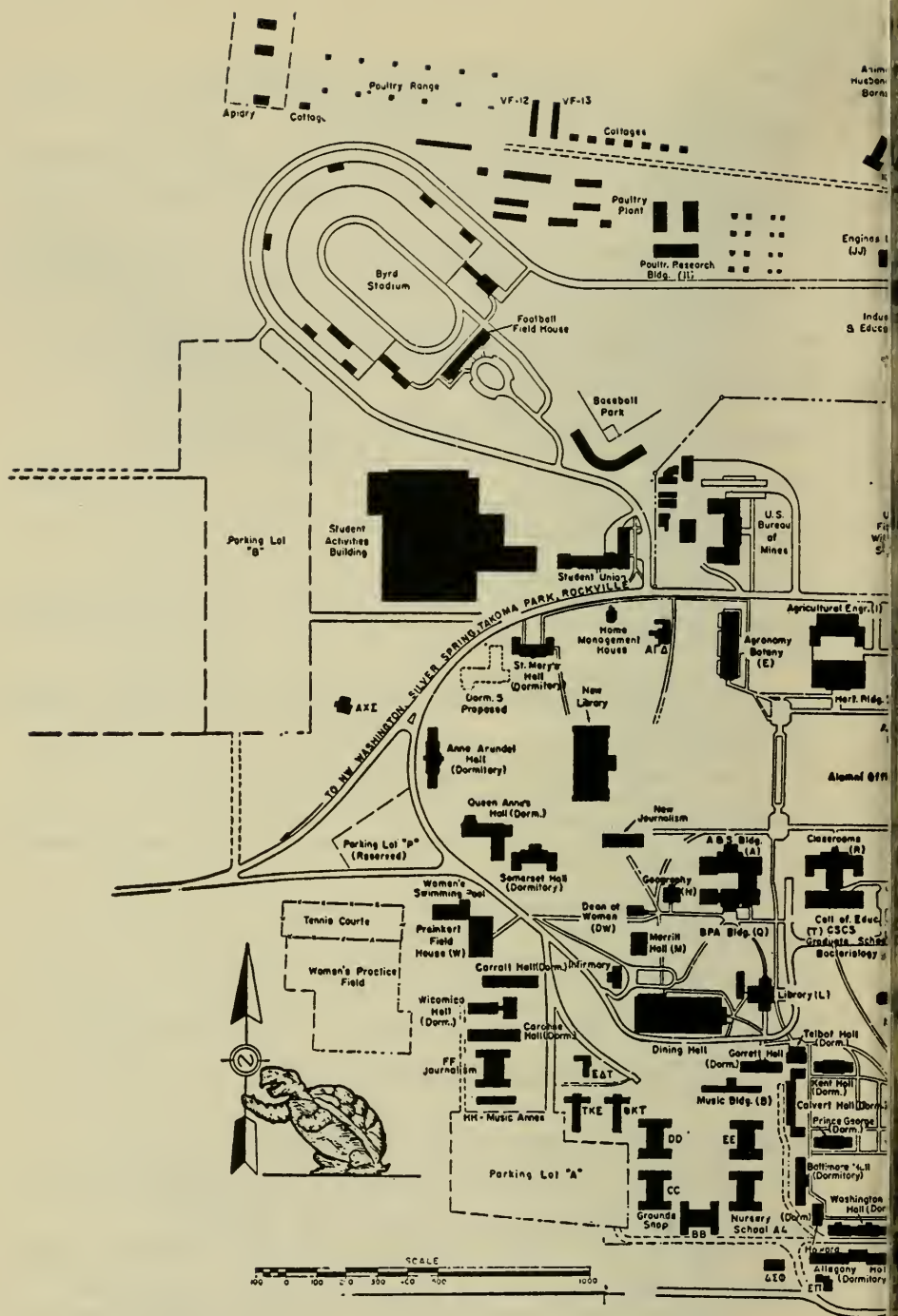
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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

A regular meeting of the Board is held the last Friday in each month, except during the months of July and August.



Dairy Husbandry Storage Sheds

Surplus Property (State Agency)

Grounds & Custodial Department

Chemical Engineering Institute

Wind Tunnel (V)

Engineering Labs (S)

Chemistry (C)

Engineering Classroom (J)

Mathematics (Y)

Administration Annex

Armory (AR)

Dairy Bldg (D)

Warehouse

Service Building

Ritchie Coliseum (Col)

Harrison Laboratory Greenhouse & Plant Lab.

Fraternity & Sorority Row

Fire Service Est. Bldg.

Montgomery Hall (Dormitory)

Lehigh Road

Washington - 8 Miles

U.S. ROUTE 1

32 MILES - BALTIMORE

AFA, KKK, ZK, etc.

College Seal: 1867-1856-1920

AA	Arts & Sciences-Francis Scott Key Hall
AB	Nursery School
AR	Armory
B	Music
IB	Administration
C	Chemistry
Col	Coliseum
D	Doity-Turner Laboratory
OD	African Psychology Laboratory
DW	Dean of Women
E	Agronomy - Botany - H. J. Patterson Hall
EE	Counseling Center
F	Horticulture - Holzappel Hall
FF	Journalism
G	Ritchie Gymnasium
GG	Activities Building
H	Home Economics - Margaret Brent Hall
I	Agricultural Engr. - Shriver Laboratory
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K	Zoology - Silvester Hall
L	Library - Shoemaker Building
M	Morrill Hall
N	Geography
O	Agriculture - Symons Hall
P	Industrial Arts & Education - J.M. Patterson Bldg.
Q	Business & Public Administration - Tolioferra Hall
R	Classroom Building - Woods Hall
S	Engr. Laboratories
T	Education - Skinner Building
U	Chem. Engr.
V	Wind Tunnel
W	Preinkert Field House
X	Judging Pavilion
Y	Mathematics
Z	Physics
JJ	Poultry - Jull Hall
II	Enigles Research Lab. (Molecular Physics)

Phi Sigma Sigma
Alpha Chi Omega
Alpha Xi Delta

Fraternities Not Shown
Alpha Epsilon Pi
Zeta Beta Tau
Phi Kappa Gamma
Tau Epsilon Phi

Civil
Defense
Training Bldg.

1957-58 CALENDAR

First Semester

1957

September 17-20	Tuesday-Friday	Registration, first semester
September 23	Monday	Instruction begins
November 27	Wednesday after last class	Thanksgiving recess begins
December 2	Monday, 8 A.M.	Thanksgiving recess ends
December 21	Saturday after last class	Christmas recess begins

1958

January 6	Monday, 8 A.M.	Christmas recess ends
January 20	Monday	Charter Day
January 21	Tuesday	Pre-Examination Study Day
January 22-29	Wednesday-Wednesday, inc.	First Semester examinations

Second Semester

February 4-7	Tuesday-Friday	Registration, second semester
February 10	Monday	Instruction begins
February 22	Saturday	Washington's birthday, holiday
March 25	Tuesday	Maryland Day
April 3	Thursday after last class	Easter recess begins
April 8	Tuesday, 8 A.M.	Easter recess ends
May 15	Thursday	Military Day
May 28	Wednesday	Pre-Examination Study Day
May 29-June 6	Thursday-Friday, inc.	Second Semester examinations
May 30	Friday	Memorial Day, holiday
June 1	Sunday	Baccalaureate exercises
June 7	Saturday	Commencement exercises

Summer Session, 1958

June 23	Monday	Registration, Summer Session
June 24	Tuesday	Summer Session begins
August 1	Friday	Summer Session ends

Short Courses

June 16-21	Monday-Saturday	Rural Women's Short Course
August 4-9	Monday-Saturday	4-H Club Week
September 2-5	Tuesday-Friday	Firemen's Short Course

College of HOME ECONOMICS

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COLLEGE OF HOME ECONOMICS

MARIE MOUNT, M.A., *Dean*

THE College of Home Economics serves Maryland and the surrounding area with its program for the education of young men and women interested in social, economic, scientific and aesthetic aspects of homemaking and of family living in relation to the community.

Objectives of the college are: to provide training for responsible citizenship; to help students develop a concept of enriched personal and family living; to prepare students for earning a living with home economics as a profession; and to promote an appreciation and utilization of the findings of research.

Faculty advisors assist the students to a wise arrangement of studies in their chosen fields, and further, urge them to acquire practical experience therein before graduation.

Special courses are offered for graduates and non-graduates who desire vocational advancement.

Organization

For administrative purposes the College of Home Economics is organized into the Departments of Textiles and Clothing, Practical Art, Home and Institution Management, and Foods and Nutrition.

Facilities

The home of the College of Home Economics, following campus tradition, is a colonial brick building planned and built to present modern equipment and facilities for education in home economics. A home management house is maintained on the campus for experience in management activities of family life.

Located, as the campus is, between two large cities, unusual opportunities are provided for both faculty and students. In addition to the University's general and specialized libraries, Baltimore and Washington furnish added Library facilities. The art galleries and museums, the government bureaus and city institutions stimulate study and provide practical experience for the home economics student.

Home Economics Club: Membership is open to all home economics students. The Club is affiliated with the American Home Economics Association.

Omicron Nu, national home economics honor society: Students of high scholarship are eligible for election to membership.

Honors and Awards, Scholarships and Loan Fund

The Danforth Foundation and the Ralston Purina Company Summer Fellowships: One of four weeks to an outstanding junior; one of two weeks to an outstanding freshman.

Borden Home Economics Scholarship Award; Three hundred dollars is given by the Borden Company to the home economics student, who, upon entering her senior year, has completed two or more courses in foods and nutrition and has the highest scholastic standing of eligible students.

Omicron Nu Scholarship Award: Omicron Nu presents annually an award to the freshman in the College of Home Economics who attains the highest scholastic average during the first semester.

The Sears Roebuck Foundation has made available four scholarships of one hundred dollars each for freshmen in the College of Home Economics.

A fund has been provided by Marie Mount for scholarships to home economics students.

Washington Flour Scholarship: This scholarship made available by the Wilkins-Rogers Milling Company of Washington, D. C. for a freshman in the College of Home Economics, covers all fees and books for one year, and is open to any student who is a resident of the District of Columbia, Prince George's or Montgomery counties in Maryland, Arlington, Fairfax or Loudoun counties or Alexandria in Virginia.

Home Economics in Business Scholarships: The Home Economics in Business section of the District of Columbia Home Economics Association provides several scholarships of one hundred dollars each. Persons eligible are freshmen women students in the College of Home Economics who are residents of the District of Columbia, Prince George's or Montgomery counties in Maryland, Arlington, Fairfax, or Loudoun counties or Alexandria in Virginia.

Venia M. Kellar Grant: A grant of \$100 is open to a Maryland student of promise who wishes to enroll in the College of Home Economics.

A loan fund, composed of contributions by the District of Columbia Home Economics Association, Maryland Chapter of Omicron Nu, and personal gifts, is available for students majoring in home economics.

Home Economics Senior Award: The home economics alumni annually present an award to the senior student who is outstanding in her application of the spirit and principles of home economics in her present living and who best shows promise of carrying these into her future home and community.

For other scholarships and awards, see General Information Issue.

Admission

All students desiring to enroll in the College of Home Economics must apply to the director of Admissions of the University of Maryland at College Park.

In selecting students more emphasis will be placed upon good marks and other indications of probable success in college rather than upon a fixed pattern of subject matter. In general, 4 units of English and 1 unit each of Social and Natural Sciences are required. One unit each of Algebra and Plane Geometry is desirable. While Foreign Language is desirable for certain programs no Foreign Language is required for entrance. Fine Arts, Trade and Vocational subjects are acceptable as electives.

Costs

Actual annual costs of attending the University include \$165.00 fixed charges; \$75.00 special fees; \$400.00 board; \$140.00 to \$170.00 lodging for Maryland residents, or \$180.00 to \$220.00 for residents of other States and Countries; and laboratory fees which vary with the laboratory courses pursued. A charge of \$250.00 is assessed students not residents of the State of Maryland. A matriculation fee of \$10.00 is charged all new students.

All students enrolled in the College of Home Economics are charged a College Fee of \$10.00 per semester to cover Laboratory Fees in their College. This fee takes the place of laboratory fees shown for each course which are charged only to students not enrolled in the College of Home Economics.

General Information

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization Program, definition of resident and non-resident regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, sororities, societies and special clubs, the University band, student publications, University Post Office and Supply Store, write to the Director of Publications for the General Information Issue of the Catalog.

Degrees

The degree of Bachelor of Science is conferred for the satisfactory completion with an average of C or better, of a prescribed curriculum of 120 academic semester hour credits. This is exclusive of 4 credits in hygiene and 4 in physical activities for women—a total of 128 credits, and exclusive of 12 credits in basic Air Science and 4 in physical activities for men—a total of 136 credits. No grade below a C is acceptable in courses within the field chosen as a major.

The Master of Science degree is offered in Foods and Nutrition and Textiles and Clothing in the College of Home Economics and in Home Economics Education in the College of Education.*

*See the Graduate School announcements.

Military Instruction

All male students, unless specifically exempted under University rules, are required to take basic Air Force R. O. T. C. training for a period of two years. The successful completion of this course is a prerequisite for graduation, but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of military training will be required to complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may carry advanced Air Force R. O. T. C. courses during their Junior and Senior years which lead to a regular or reserve commission in the United States Air Force.

For further details concerning the requirements in Military Instruction, write the Director of Publications for a copy of the "General Information Issue" of the Catalog.

The Student Load

The student load in the College of Home Economics varies from 15-18 credits. A student wishing to carry more than 18 credits must have a B-grade average and the permission of the Dean.

Curricula†

A student may elect one of the following curricula, or a combination of curricula: general, home economics education, textiles, and clothing, practical art, crafts, home economics extension, institution management—food service and housekeeping administration, and foods and nutrition. A student who wishes to teach home economics may register in home economics education in the College of Home Economics or in the College of Education. (See Home Economics Education.) Students in all curricula follow similar programs during the freshman year. It is advisable for students to choose a curriculum at the beginning of the sophomore year. Before continuing with the third year of any curriculum, the student must have attained junior standing: 64 semester hours with a C-grade average. (See Academic Regulations, Junior standing.)

American Civilization Program

The University considers it important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American Civilization designed to provide the student with this general educational background. (See Catalogue of General Information for details of the program.)

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula)

†In order to meet the particular need of a student, certain adjustments in these requirements may be made with the approval of the student's adviser and Dean.

obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the Program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

Through such testing a student may be released from 3 hours of English, 3 hours of American History, and 3 hours of American Government, leaving 9 hours of English and 3 hours of history as absolute requirements. Students released from 3 hours of English will ordinarily take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in history will ordinarily take Hist. 56 instead of Hist. 5 and 6.

The following courses required of all home economics majors may apply to the American Civilization Program: Econ. 37, Soc. 1, and Psych. 1. The additional 3 semester hours may be in advanced courses in the same department as the one from which the student is excused; Phil. 1, Philosophy of Modern Man; History 2, History of Modern Europe; History 51 or 52, The Humanities; Music 20, Survey of Music Literature or Art 22, History of American Art; or Sociology 5, Anthropology.

GENERAL HOME ECONOMICS

The general home economics curriculum is planned to give students a good basis for personal development, for education in family living, and for job opportunities, requiring a general knowledge of the various areas of home economics. Electives are adequate for further developing a special ability or interest within the areas of home economics or within other colleges, such as: music, social science, radio, journalism, education.

	—Semester—	
	I	II
<i>Freshman Year</i>		
†Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life.....	....	3
†G. & P. 1—American Government.....	3	....
Speech 7—Public Speaking.....	2	(2)
*H. E. 1—Home Economics Orientation.....	0	....
Tex. 1—Textiles .....	....	3
Pr. Art 1—Design	3	....
Hea. 2, 4—Personal and Community Health (for women).....	2	2
A. S. 1, 2—Air Science (for men students).....	(3)	(3)
Physical Activities	1	1
**Chem. 11, 13—General Chemistry, Science, or Elective.....	3	3
Total	17	15

<i>Sophomore Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature.....	(3)	(3)
**Chem. 11, 13—General Chemistry, Science, or Elective.....	3	3
Foods 2, 3—Foods.....	3	3
Econ. 37—Fundamentals of Economics.....	3	....
Psych. 1—Introduction to Psychology.....	....	3
Clo. 20—Clothing Construction.....	3	....
Pr. Art 20—Costume Design.....	....	3
Physical Activities	1	1
A. S. 3, 4—Air Science (for men students).....	(3)	(3)
Total	16	16

Junior Year

Home Mgt. 150, 151—Management of the Home.....	3	3
Nut. 110—Nutrition or	3	....
Nut. 10—Elements of Nutrition.....	(3)	....
Pr. Art 2—Survey of Art History.....	2	....
Pr. Art 40, 41—Interior Design.....	1	3
Clo. 22—Clothing Construction or Clo. 21, Pattern Design.....	....	2-(3)
Foods 101—Meal Service .....	....	2
Foods 100—Food Economics	2	....
Zool. 16—Human Physiology.....	4	....
or Zool. I—General Zoology—4 cr.		
Elective	3	6
Total	18	16-17

Senior Year

†H. 5, 6—History of American Civilization.....	3	3
Home Mgt. 152—Experience in Management of the Home.....	....	3
C. Ed. 110—Child Development.....	3	....
Bact. 51—Household Bacteriology.....	....	3
Electives	8-9	6
Total	14-15	15

Textiles and Clothing

The curricula in textiles and clothing are planned to help students to be intelligent and responsible consumers; to give them preliminary training for positions in textiles and clothing in business, in textile testing, and research in textiles and clothing.

*Not required of men students.

**For practical art, crafts, and textile and clothing majors science credits totaling 6-8 semester hours may be selected from the following: Bot. 1—General Botany (4); Chem. 1, 3—General Chemistry (4, 4); Chem. 11, 13—General Chemistry (3, 38); Ent. 1—Introductory Entomology (3); Geog. 1, 2—Economic Resources (2, 2); Physics 1, 2—Elements of Physics (3, 3); Soc. 5—Anthropology (3).

For all other curricula chemistry is required.

†See information on page 12 concerning the American Civilization Program.

Men majoring in these curricula will be allowed substitutions for certain required courses and will choose supporting courses according to their particular interests and needs.

Clo. 20, Clothing Construction is to be taken in the freshman year instead of an elective. Clo. 22, Clothing Construction may be required of students needing the additional experience.

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature.....	(3)	(3)
*Chem. 11, 13, Science or Elective.....	3	3
Foods 1—Introductory Foods.....	...	3
Econ. 37—Fundamentals of Economics.....	3	(3)
Psych. 1—Introduction to Psychology.....	(3)	3
Pr. Art 20—Costume Design.....	...	3
Clo. 21—Pattern Design.....	3	(3)
A. S. 3, 4—Air Science (for men students).....	(3)	(3)
Physical Activities	1	1
Electives	3	...
Total	16	16

Textiles

Junior Year

Home Mgt. 150, 151—Management of the Home.....	3	3
Foods 101—Meal Service.....	2	...
Nut. 10—Elements of Nutrition or.....	3	...
Nut. 110—Nutrition	(3)	...
Art .....	...	2
Physics 1, 2—Elements of Physics.....	3	3
Chem. 31, 32, 33, 34—Elements of Organic Chemistry.....	3	3
Math. 10—Algebra .....	...	3
Tex. 100—Advanced Textiles	3	...
Tex. 102—Textile Testing .....	...	3
Total	17	17

Senior Year

†H. 5, 6—History of American Civilization.....	3	3
Bact. 51—Household Bacteriology.....	...	3
Tex. 101—Problems in Textiles.....	...	3
Chem.—Chemistry .....	...	4
Home Mgt. 152—Experience in Management of the Home.....	3	...
C. Ed. 110—Child Development.....	3	...
B. A. 130—Elements of Business Statistics.....	3	...
Speech .....	...	3
Tex. 108—Decorative Fabrics.....	2	...
Total	14	16

*Chemistry 11, 13 are required for a major in textiles.

Textiles and Clothing*(Semester)**Junior Year*

	<i>I</i>	<i>II</i>
Home Mgt. 150, 151—Management of the Home.....	3	3
Nut. 10—Elements of Nutrition.....	....	3
Art	3	3
Clo. 122—Tailoring	2	....
Tex. 100—Advanced Textiles.....	3	....
Foods 101—Meal Service.....	2	....
Psychology .....	....	3
Tex. 108—Decorative Fabrics.....	2	....
Bact. 51—Household Bacteriology .....	....	3
Total	15	15

Senior Year

†H. 5, 6—History of American Civilization.....	3	3
C. Ed. 110—Child Development.....	....	3
Tex. 105—Consumer Problems in Textiles.....	(3)	3
Home Mgt. 152—Experience in Management of the Home.....	3	(3)
Clo. 120—Draping	3	....
Clo. 124—Projects and Readings in Textiles and Clothing.....	2	....
Speech	3	(3)
Clo. 126—Fundamentals of Fashion.....	....	3
Electives	3	5
Total	17	17

Practical Art (For Women)

This curriculum permits a choice of three fields of concentration: art in advertising, interior design, costume design. Emphasis is given to the selection of wearing apparel and house furnishings with relation to personality and family living. Positions available to graduates include designing, promotion, selling or buying of wearing apparel or house furnishings or both.

Practical Art (For Women)*Freshman Year*

Pr. Art. 2—Survey of Art History (2) and O. T. 1—Principles of Typewriting (2) are required subjects for the freshman year. O. T. 1 is not required of students who have completed one full year of typing in high school.

*(Semester)**Sophomore Year*

	<i>I</i>	<i>II</i>
Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature.....	(3)	(3)
Econ. 37—Fundamentals of Economics.....	3	....
Psych. 1—Introduction to Psychology.....	....	3
Foods 1—Introductory Foods	3	....
Pr. Art 20—Costume Design	3	....
Pr. Art 21—Action Drawing .....	....	2
Pr. Art 30—Typography and Lettering	3	....
Pr. Art 40, 41—Interior Design	1	3
Laboratory Science .....	....	4
Physical Activities	1	1
Total	17	16

†See information on page 12 concerning the American Civilization Program.

	Semester	
	I	II
Junior Year		
Home Mgt. 150, 151—Management of the Home.....	3	3
Foods 101—Meal Service.....	2	....
Nut. 10—Elements of Nutrition.....	....	3
*B. A. 150a—Marketing Principles and Organization.....	3	....
*B. A. 154—Retail Store Management.....	3	....
Pr. Art 0—Professional Lectures.....	....	0
*Pr. Art 38—Photography.....	2	....
Pr. Art 120, 121—Costume Illustration, or.....	2	2
Pr. Art 142, 143—Advanced Interior Design.....	(2)	(2)
One group of the following:	3	3
Advertising: Cr. 3—Creative Art Inspired by Primitive Art 2		
Pr. Art 4—Three-dimensional Design 2		
Pr. Art 3—Silk Screen Printing 2		
Costume: Clo. 120—Draping 3		
Tex. 105—Consumer Problems in Textiles 3		
Interior: Tex. 106—Household Textiles 3		
Clo. 128—Home Furnishings 3		
Elective .....	....	3
Total	18	14

NOTE: Students who are interested in merchandising are advised to take Pr. Art 198—Store Experience (3) the summer following their junior year. They must make arrangements with the Head of the Department of Practical Art early in the spring semester of the junior year.

Senior Year

†H. 5, 6—History of American Civilization.....	3	3
Home Mgt. 152—Experience in Management of the Home.....	(3)	3
C. Ed. 110—Child Development.....	(3)	3
*Speech 115—Radio in Retailing.....	3	....
*B. A. 155—Problems in Retail Merchandising.....	....	3
Pr. Art 132—Advertising Layout.....	2	(2)
Pr. Art 136—Display.....	2	(2)
Individual Problems in Advertising, Costume, or Interior.....	2	2
Electives	3	2
Total	15	16

Practical Art (For Men)

Requirements are the same as for women with the following modifications:

Additions: A. S. 1, 2, 3, 4; 15 hours in art in merchandising, merchandising, and creative writing to be selected in consultation with the student's adviser.

*See asterisk note on page 18.

*Students who desire a non-business program may substitute one of the following programs for the 18 credits in starred courses: 12 semester hours of French, German, or Spanish plus one of the following groups of courses: I—Soc. 5—Anthropology (3); Eng. 12—Introduction to Creative Writing (2); Eng. 170—Creative Writing (2) or Speech 117—Radio Continuity Writing (3). II—Journ. 10, 11—News Reporting (6); Journ. 165—Feature Writing (3). III—Art 5—Still-life (3); Art 104—Life Class (3); Art 113—Illustration (3). IV—Soc. 5—Anthropology (3). II. 51, 52—The Humanities (6) or Art 9, 11—Historical Survey of Painting, Sculpture, and Architecture (6). With any of these variations of the Practical Art curriculum, the student is responsible for being able to schedule her full program of courses. The above curriculum variations are not open to men students as their program is sufficiently flexible.

†See information on page 12 concerning the American Civilization Program.

**Omissions: H. E. 1; Foods 1, 101; Home Mgt. 150, 151, 152; C. Ed. 110; Hea. 2, 4.

Crafts (For Women)

This curriculum permits a choice of two vocational areas: pre-occupational therapy and teaching. Emphasis is given to the joy of creation through crafts. Good design is stressed.

Freshman Year

Pr. Art. 2—Survey of Art History (2) is a required subject of the freshman year.

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature.....	3	3
Foods 1—Introductory Foods.....	3	...
Econ. 37—Fundamentals of Economics.....	3	...
Psych. 1—Introduction to Psychology.....	...	3
Pr. Art 3—Silk Screen Printing.....	...	2
Pr. Art 4—Three-dimensional Design	2	...
Cr. 2—Simple Crafts	2	...
Cr. 3—Creative Art Inspired by Primitive Art.....	2	...
Cr. 20, 21—Ceramics	2	2
Laboratory Science (see below, Pre-occupational Therapy).....	...	4
Physical Activities	1	1
*Electives .....	...	3
Total	18	18

Junior Year

Home Mgt. 150, 151—Management of the Home.....	3	3
†H. 5, 6—History of American Civilization.....	3	3
Nut. 10—Elements of Nutrition.....	...	3
Pr. Art 0—Professional Lectures.....	...	0
Cr. 30, 31—Metalry	2	2
Cr. 40, 41—Weaving	2	2
Ind. Ed. 9—Art Crafts.....	2	...
Ind. Ed. 2—Elementary Woodworking .....	...	2
*Electives	4	2
Total	16	17

Senior Year

Pr. Art 38—Photography.....	2	...
Cr. 5—Puppetry .....	...	3
Advanced Crafts	4	2
*Electives	7	9
Total	13	14

**Required courses which have been omitted may be taken as electives.

*One of the two following programs to be completed in addition to the above specified subjects:

I. Pre-Occupational Therapy: Zoo. 1. General Zoology (4), Zoo. 14, 15. Human Anatomy and Physiology (4, 4), Phys. 1. Elements of Physics (3), P.E. 100. Scientific Bases of Movement (4), Psych. 5. Mental Hygiene (3), Art 7, Landscape Painting (3).

II. Teaching: H. D. Ed. 100, 101. Principles of Human Development (3, 3), Ed. 130 or 131. Theory of Junior or Senior High School (2), Ed. 140. Curriculum, Instruction and Observation in Art (3), Ed. 145. Principles of High School Teaching (3), Ed. 143 Practice Teaching in Art (8).

†See information on page 12 concerning the American Civilization Program.

Crafts (For Men)

Requirements are the same as for women with the following modifications:

Omissions: H. E. 1; Food 1; Home Mgt. 150, 151; Hea. 2, 4.

Additions: A. S. 1, 2, 3, 4; also 9 hours in crafts, art therapy or other courses closely related to the student's objective. These to be selected in consultation with the student's advisor and approved by him.

For other curricula in art, see offerings under the College of Education and the College of Arts and Sciences.

Home Economics Education

The Home Economics Education curriculum is designed for students who are preparing to teach vocational or general home economics in the public school system of Maryland. It includes studies of various areas of home economics and the allied sciences, with professional training for teaching these subjects. A student majoring in this curriculum may also qualify for a science minor.

Students electing this curriculum may register in the College of Education or in the College of Home Economics.

Home Economics Education Curriculum

<i>Freshman Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
†Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life.....	3	....
†G. & P. 1—American Government.....	....	3
Speech 1, 2—Public Speaking.....	2	2
H. E. 1—Home Economics Lectures.....	0	....
Pr. Art 1—Design.....	3	....
Chem. 11, 13—General Chemistry or Elective.....	3-(2)	3-(2)
Hea. 2, 4—Personal and Community Health.....	2	2
Physical Activities	1	1
Tex. 1—Textiles .....	....	3
Total	17-(16)	17-(16)
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education.....	2	....
Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature.....	(3)	(3)
†H. 5, 6—History of American Civilization.....	3	3
Elective or Chem. 11, 13—General Chemistry.....	(2)-3	(2)-3
Clo. 20—Clothing .....	....	3
Foods 2, 3—Foods.....	3	3
Pr. Art 20—Costume Design.....	3	....
Physical Activities	1	1
Total	(17)-18	(15)-16

†See information on page 12 concerning the American Civilization Program.

	—Semester—	
	I	II
<i>Junior Year</i>		
H. E. Ed. 140—Curriculum, Instruction, and Observation.....	3	....
H. D. Ed. 100, 101—Principles of Human Development.....	3	3
Home Mgt. 150, 151—Management of the Home.....	3	3
Nut. 110—Nutrition	3	....
Foods 101—Meal Service.....	....	2
Clo. 22—Clothing Construction.....	....	2
Econ. 37—Fundamentals of Economics.....	....	3
Zool. 16—Human Physiology.....	4	....
Bact. 51—Household Bacteriology.....	....	3
Total	16	16

**Senior Year*

H. E. Ed. 102—Problems in Teaching Home Economics.....	....	3
H. E. Ed. 148—Teaching Secondary Vocational Home Economics .....	....	8
Home Mgt. 152—Experience in Management of the Home.....	....	3
Ed. 145—Principles of High School Teaching.....	....	3
Pr. Art 2—Survey of Art History.....	2	....
Pr. Art 40—Interior Design.....	1	....
Bot. 1—General Botany.....	4	....
Electives	6	....
Total	13	17

Home Economics Extension**

This curriculum outlines the training necessary for the young woman who wishes to work with rural people through extension service of other agencies interested in the educational and social problems of rural living.

	—Semester—	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature.....	(3)	(3)
Elective or Chem. 11, 13—General Chemistry.....	3	3
Foods 2, 3—Foods.....	3	3
Econ. 37—Fundamentals of Economics.....	3	....
Clo. 20—Clothing Construction.....	3	....
Psych. 1—Introduction to Psychology.....	....	3
Clo. 21—Pattern Design.....	....	3
Physical Activities	1	1
Total	16	16

*Subjects in the senior year will be so arranged that the two semesters may be interchanged.

**Experience in the field of Home Economics Extension is encouraged for all students majoring in this curriculum. Such experience should be gained before the completion of the senior year.

<i>Junior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
H. Mgt. 150, 151—Management of the Home.....	3	3
Foods 100—Food Economics.....	2	...
Nutrition 110—Nutrition	3	...
†History 5, 6—History of American Civilization.....	3	3
H. D. Ed. 100, 101—Principles of Human Development I and II	3	3
Nutrition 112—Dietetics .....	...	3
R. Ed. 150—Extension Education.....	...	2
Zoo. 16—Human Physiology.....	4	...
Pr. Art 2—Survey of Art History.....	...	2
Pr. Art 40—Interior Design .....	...	1
Total	18	17

Senior Year

H. Mgt. 152—Experience in Management of the Home.....	3	...
H. E. 103—Demonstrations.....	...	2
Bact. 51—Household Bacteriology.....	...	3
Soc. 113—The Rural Community.....	...	3
Pr. Art elective (Pr. Art or Crafts course).....	(2)-3	...
Clo. 128—Home Furnishings.....	...	3
H. E. Ed. 102—Problems in Teaching Home Economics.....	3	...
R. Ed. 160—Agricultural Information Methods.....	2	...
Foods 101—Meal Service.....	2	...
Electives	2	3-(4)
Total	(14)-15	14-(15)

Institution Management

This curriculum provides training for those interested in housing and the food service administration for large groups of persons. The work is of two general types: (1) food service in such institutions as hospitals, schools and colleges; in the public schools where a midday meal is served; and in commercial organizations; restaurants, inns, hotels and industrial cafeterias; (2) housekeeping in inns, hotels, hospitals, clubs, schools and colleges.

This curriculum meets the academic requirements for entrance to a dietetic internship course and for membership in the American Dietetic Association.

Students following this curriculum are required to have, before the senior year, field experience in food service. This experience must be satisfactory in length of time, type of work and in quality.

Men specializing in institution management will be allowed substitutions for certain required courses.

†See information on page 12 concerning the American Civilization Program.

	<i>Semester</i>	
	<i>I</i>	<i>II</i>
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature.....	(3)	(3)
Chem. 31, 32, 33, 34—Organic Chemistry.....	3	3
Foods 2, 3—Foods	3	3
Econ. 37—Fundamentals of Economics.....	....	3
Zool. 16—Human Physiology.....	4	....
Psy. 1—Introduction to Psychology.....	3	....
Bact. 51—Household Bacteriology.....	....	3
A. S. 3, 4—Air Science (for men students).....	(3)	(3)
Physical Activities	1	1
Total	17	16

For students wishing emphasis on food service administration:

Junior Year

Home Mgt. 150, 151—Management of the Home.....	3	3
*Nut. 110—Nutrition	3	....
*Nut. 112—Dietetics .....	....	3
*Chem. 81, 82—General Bio-Chemistry.....	4	....
Inst. Mgt. 160—Institution Organization and Management.....	3	....
*Inst. Mgt. 161—Institution Purchasing and Accounting.....	....	3
C. Ed. 110—Child Development.....	....	3
Elective	3	2
Total	16	14

Senior Year

†History 5, 6—History of American Civilization.....	3	3
Home Mgt. 152—Experience in Management of the Home.....	....	3
Pr. Art 2—Survey of Art History.....	2	....
Pr. Art 40—Interior Design	1	....
H. Ec. Ed. 102—Problems in Teaching Home Economics.....	....	3
*Foods 102—Experimental Foods.....	3	....
*Inst. Mgt. 162—Institution Foods.....	....	3
**Nut. 113—Diet and Disease.....	....	2
*Inst. Mgt. 164—Advanced Institution Management.....	....	2
*Chem. 81, 82—General Bio-Chemistry.....	4	....
Electives	4	....
Total	17	16

*For students wishing emphasis on housekeeping administration, the starred courses may be substituted with: Nut. 10—Elements of Nutrition (3), Tex. 105—Consumer Problems in Textiles (3), Inst. Mgt. 181—Purchasing and Accounting for Housekeeping Administration (3), I.M. 182—Housekeeping Management (3), Inst. Mgt. 183—Problems in Housekeeping Management (3), Psychology 5—Mental Hygiene (3), Clo. 128—Home Furnishings (3), Psychology 2—Applied Psychology (3), Psychology 110—Educational Psychology (3).

**A student planning to do institutional work other than hospital dietetics is not required to take Nut. 113, Diet and Disease.

†See information on page 12 concerning the American Civilization Program.

Foods and Nutrition

The purpose of the Foods and Nutrition Curriculum is two-fold—to provide an education in this field for the individual's personal use and for use in promoting good health and happiness in the family group, and to provide training for professional use; in teaching, research, editorial or promotional work.

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature.....	(3)	(3)
Chem. 31, 32, 33, 34—Elements of Organic Chemistry.....	3	3
Foods 2, 3—Foods.....	3	3
Zool. 16—Human Physiology.....	4	....
Psych. 1—Introduction to Psychology.....	3	....
Econ. 37—Fundamentals of Economics.....	....	3
Bact. 51—Household Bacteriology.....	....	3
Physical Activities	1	1
A. S. 3, 4—Air Science (for men students).....	(3)	(3)
Total	17	16

Junior Year

Home Mgt. 150, 151—Management of the Home.....	3	3
Foods 100—Food Economics	2	....
Foods 101—Meal Service .....	....	2
Nut. 110—Nutrition	3	....
Nut. 112—Dietetics .....	....	3
Chem. 81, 82—General Bio-Chemistry.....	4	....
C. Ed. 110—Child Development.....	....	3
†Hist. 5, 6—History of American Civilization.....	3	3
Pr. Art 2—Survey of Art History.....	2	....
Elective .....	....	3
Total	17	17

Senior Year

Chem. 166—Food Analysis	3	....
Chem. 167—Food Analysis or Elective.....	....	3
Home Mgt. 152—Experience in Management of the Home.....	....	3
Pr. Art 40—Interior Design.....	1	....
Foods 102—Experimental Foods.....	3	....
Foods 103—Demonstrations .....	....	2
Foods 104—Advanced Foods	2	....
Elective	6	6
Total	15	14

†See information on page 12 concerning the American Civilization Program.

COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of hours' credit is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

FOODS AND NUTRITION*

Professor King; Associate Professor Braucher; Assistant Professor Cornell; Instructors, Collins, Duke; Lecturers Creamer, Pelcovits

A. Foods

Foods 1. Introductory Foods (3)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$7.00.

For students in other colleges and for majors in Crafts, Practical Art, Textiles and Clothing.

Foods 2, 3. Foods (3, 3)—First and second semesters. One lecture and two laboratory periods a week. Laboratory fee, \$7.00.

Composition, selection and preparation of food with a study of the scientific principles involved. Analysis of recipes and study of standard products.

B. Nutrition

Nut. 10. Elements of Nutrition (3)—First and second semesters.

For students in other colleges and for majors in Crafts, Practical Art, Textiles and Clothing.

For Advanced Undergraduates and Graduates

Foods 100. Food Economics (2)—First semester. Prerequisite, Foods 1 or 2, 3. One lecture and one laboratory period a week. Laboratory fee, \$7.00.

Sources of our food supply; buying of food for the family.

*Tailored white uniforms are required for all laboratory work in Foods and Nutrition.

Foods 101. Meal Service (2)—First and second semesters. Two laboratory periods a week. Prerequisite, Foods 1, or 2, 3. Laboratory fee, \$7.00.

Planning and serving meals for family groups considering nutritional needs and cost; includes entertaining.

Foods 102. Experimental Foods (3)—First semester. One lecture and two laboratory periods a week. Prerequisites, Foods 2, 3; Organic Chemistry; Chem. 31, 32, 33, 34. Laboratory fee, \$7.00.

A study of food preparation processes from the experimental viewpoint.

Foods 104. Advanced Foods (2-3)—First semester. Two laboratory periods a week. Prerequisite, Foods 2, 3; Chem. 31, 32, 33, 34. Laboratory fee, \$7.00.

The physical and chemical behavior of the basic food constituents in food preparation and processing; study of recent advances in those fields.

Foods 105. Foods of Other Countries (3)—Second semester. One lecture and two laboratory periods a week. Prerequisite, Foods 1 or 2, 3, or equivalent. Laboratory fee, \$7.00.

Food preparation and food customs of the peoples of other countries.

Nut. 110. Nutrition (3)—First and second semesters. Prerequisite, Foods 2, 3; Organic Chemistry, Chem. 31, 32, 33, 34 to precede or parallel. Laboratory fee, \$7.00.

A scientific study of principles of human nutrition. Animal experimentation. Correction of nutritional deficiencies by dietary studies.

Nut. 111. Child Nutrition (2)—First and Second semesters. One lecture and one laboratory period a week. Prerequisite, Foods 1 or 2, 3, Nut. 10 or 110.

Principles of human nutrition applied to growth and development of children. Experience in a nursery school.

Nut. 112. Dietetics (3)—Second semester. One lecture and two laboratory periods a week. Prerequisite, Nut. 110. Laboratory fee, \$7.00.

A study of food selection for health; planning and calculating dietaries for children, adults and family units; methods of teaching food values and nutrition.

Nut. 113. Diet and Disease (2)—Second semester. Alternate years. Prerequisite, Nut. 110.

Modifications of the normal adequate diet to meet the nutritional needs in treating certain diseases.

Nut. 114. Nutrition for Health Services (3)—Second semester. Prerequisite, Nut. 10 or the equivalent.

A scientific study of nutritional status and the effect of food habits and food consumption on family health. Nutritional requirements for individuals in different stages

of development. Techniques and procedures for the application of nutrition knowledge with consideration of various economic levels and social backgrounds. For graduate nurses, dietitians, health teachers, and social workers.

For Graduates

Foods 200. Advanced Experimental Foods (3-5)—Second semester. Two lectures, three laboratories. Laboratory fee, \$7.00.

Includes experimental problems, special emphasis on use of Maryland products.

Nut. 208. Recent Progress in Human Nutrition (3)—Second semester.

The recent developments in the science of nutrition with emphasis upon the interpretations of these findings for application in health and disease. Aids for the dietitian in creating a better understanding of nutrition among patients, students of graduate status and personnel, such as those of the dental and medical profession.

Nut. 210. Readings in Nutrition (3)—First semester.

Reports and discussion of outstanding nutritional research and investigation.

Nut 211. Problems in Nutrition (3-5)—Second semester.

Experience in a phase of nutrition research which is of interest to the student. Use of experimental animals, human studies, or an extensive and critical survey of the literature.

Nut. 212. Nutrition for Community Service. (3)—First semester.

Applications of the principles of nutrition to various community problems. Students may work on problems of their own choosing.

Foods and Nut. 204. Recent Advances in Foods and Nutrition (2-3)—Second semester.

A study of the recent advances in the manipulation of food materials. Newer methods of processing and packaging. Study of the effect of these methods of processing, packaging and storage on the nutritive value of food. Principles of photography as applied to the preparation and handling of foods for photographic processes for magazines and newspapers.

Foods and Nut. 220. Seminar (1)—One hour a week, first and second semesters.

Reports and discussions of current research in the fields of food and nutrition.

Foods and Nut. 221. Research—Arranged, Credit in proportion to work done and results accomplished. Laboratory fee, \$7.00

Investigation in some phases of foods or nutrition which may form the basis of a thesis.

HOME ECONOMICS—GENERAL

H. E. 1. Home Economics Orientation (0)—First semester. Required of Home Economics freshmen.

Orientation to the student activities and academic life of the University and to the field of Home Economics. Demonstrations, lectures, panels, group and individual discussions on personal and academic adjustment and on vocations open to persons trained in home economics.

H. E. 103. Demonstrations (2)—Second semester. Two laboratory periods a week. Prerequisites, Clo. 20; Foods 1 or 2, 3; Tex. 1. Laboratory fee \$7.00.

Experience in planning and presenting demonstrations.

HOME AND INSTITUTION MANAGEMENT

Professor Mount; Associate Professors Braucher, Crow;
Instructors Collins, Mearig; Lecturer, Pelcovits

A. Home Management—Family Living

Home Mgt. 150, 151. Management of the Home (3, 3)—First and second semesters. Two lectures and one laboratory period. Home Mgt. 150 prerequisite to Home Mgt. 151.

The philosophy and application of principles of scientific management in the home through the use of resources; management of time, energy, and money; housing as a social problem; housing to meet family needs; selection, care and use of household equipment.

Home Mgt. 152. Experience in Management of the Home (3)—First and second semesters. Prerequisites, Home Mgt. 150, 151. Laboratory fee, \$7.00.

Residence for one-third of a semester in the Home Management House. Experience in planning, coordinating and participating in the activities of a household, composed of a faculty member and a group of students.

Home Mgt. 155. Money Management (2)—Two lectures. Prerequisite H. Mgt. 150 or permission from instructor. Integrating the use of money and other available resources to meet both individual and family wants and needs.

Home Mgt. 156. Household Equipment (2)—Two laboratory periods a week. Problems in selection, use and care of small and large equipment.

Home Mgt. 158. Special Problems in Management (3)—Two lectures; one two-hour lab. Prerequisites, H. Mgt. 150, 151 or equivalent. Laboratory fee \$3.00.

Analysis of some of the important management problems in the home and in the home economics classroom. Financial problems, problems in work simplification, problems related to housing and household equipment.

B. Institution Management—Group Living

Inst. Mgt. 160. Institution Organization and Management (3)—First semester. Two lectures and one laboratory period a week. Prerequisites, Foods 2, 3; Nut. 110; Home Mgt. 150, 151 to precede or parallel.

The principles of scientific organization and management as applied to supervision of food services, and to housekeeping administration within an institution.

Inst. Mgt. 161. Institution Purchasing and Accounting (3)—Second semester. Two lectures and one laboratory period a week.

Purchasing of food, supplies, and equipment for institutional use, and the principles involved in accounting as applied to food services.

Inst. Mgt. 162. Institution Foods (3)—Second semester. One lecture and two laboratory periods a week. Prerequisites, Foods 2, 3; Inst. Mgt. 160, 161.

Practical experience in preparing and serving food for large groups, including the use of standard recipes, calculation of food costs, menu planning and use of institution equipment.

Inst. Mgt. 164. Advanced Institution Management (2)—Second semester. One lecture and one laboratory period a week. Prerequisites, Inst. Mgt. 160, 161, 162 or the equivalent.

Special problems in institution management.

Inst. Mgt. 165. The School Lunch (3)—Second semester. Two lectures and one laboratory period a week. Prerequisites, Foods 2, 3; Nut. 110, or equivalent; Inst. Mgt. 160 or experience in management.

Problems relating to the planning, organization, management and serving of the noon meal in schools and in child-care centers.

Inst. Mgt. S166. Nutrition and Meal Planning (2)—Summer session only.

Special application to group food services; school lunches, restaurants, and hospitals.

Inst. Mgt. 181. Purchasing and Accounting for Housekeeping Administration (3)—Second semester. Two lectures and one laboratory period.

Purchasing of household textiles, furnishings, supplies and equipment for institutional use, and the principles involved in budgeting and accounting as applied to housekeeping administration.

Inst. Mgt. 182. Housekeeping Management (3)—First semester.

Principles concerning housekeeping management, floor plans, sanitation, safety personnel and legal problems.

Inst. Mgt. 183. Problems in Housekeeping Management (3)—Second semester. One lecture and two laboratory periods.

Special lectures and advanced problems in housekeeping administration.

Inst. Mgt. 200. Advanced Food Service Management and Supervision (3)—First semester. One lecture and two laboratory periods a week. Prerequisite, Inst. Mgt. 162, 165, or the equivalent.

Special problems in management and service. Opportunity for the student to work out problems encountered on the job.

HOME ECONOMICS EDUCATION*

For Advanced Undergraduates and Graduates

H. E. Ed. 102. Problems in Teaching Home Economics (3)—First and second semesters. Required of seniors in Home Economics Education. Prerequisite, H. E. Ed. 140.

A study of the managerial aspects of teaching and administering a homemaking program; the physical environment, organization and sequence of instructional units, resource materials, evaluation, home projects.

H. E. Ed. 120. Evaluation of Home Economics (2).

The meaning and function of evaluation in education; the development of a plan for evaluating a homemaking program with emphasis upon types of evaluation devices, their construction, and use.

H. E. Ed. 140. Curriculum, Instruction, and Observation (3)—Second semester. Required of juniors in Home Economics Education. Prerequisite, Psych. 110.

The place and function of home economics education in the secondary school curriculum. Philosophy of education for home and family living; characteristics of adolescence, construction of source units, lesson plans, and evaluation devices; directed observations in junior and senior high school home economics departments.

H. E. Ed. 148. Teaching Secondary School Vocational Homemaking (8)—First and second semesters. Prerequisite, H. E. Ed. 140 and 102 or 102 parallel. Laboratory fee, \$30.

Observation and supervised teaching in approved secondary school home economics departments in Maryland, the District of Columbia and Baltimore City. Eight weeks of practicum in two schools with both junior and senior high school classes. Students must reserve a half day in their schedule for the student teaching assignment.

H. E. Ed. 200. Seminar in Home Economics Education (2)—First semester.

General prerequisites must include graduate standing.

H. E. Ed. 202. Trends in the Teaching and Supervision of Home Economics (2-4).

Study of home economics programs and practices in light of current educational trends. Interpretation and analysis of democratic teaching procedures, outcomes of instruction, and supervisory practices.

TEXTILES AND CLOTHING

Professor Mitchell; Assistant Professors Harris, Heagney, Wilbur;
Instructors Parker, Stutts.

A. Textiles

Tex. 1. Textiles (3)—First and second semesters. Two lectures and one laboratory period a week. Laboratory fee, \$3.00.

Basic introduction to textile field. Study of textile fibers; evaluation of labeling on textiles; analysis and care of fabrics.

*For further information see College of Education Catalog.

B. Clothing

Clo. 20. Clothing Construction (3)—First and second semesters. Prerequisite, Tex. 1. Three laboratory periods a week. Laboratory fee, \$3.00.

Interpretation and use of commercial patterns; fabric study; basic fitting and construction techniques.

Clo. 21. Pattern Design (3)—First and second semesters. Three two-hour laboratory periods a week. Prerequisite, Clo. 20 and consent of department or successful performance on the Placement Test in Clothing. Laboratory fee, \$3.00.

Pattern study, figure analysis and pattern alteration, development and adaptation of individual basic pattern, creation of original designs.

Clo. 22. Clothing Construction (2)—First and second semesters. Prerequisites, Tex. 1 and Clo. 20. Two laboratory periods a week. Laboratory fee, \$3.00.

Continuation of Clo. 20. To give additional experience in the use and adaptation of commercial patterns and for increased skill in construction techniques.

Courses for Advanced Undergraduates and Graduates

Tex. 100. Advanced Textiles (3)—First semester. One lecture and two laboratory periods a week. Prerequisite, Tex. 1. Laboratory fee, \$3.00.

The intensive study of textiles from the fiber to the finished fabric, from the producer to the consumer. Analysis of fabric construction and serviceability features.

Tex. 101. Problems in Textiles (3)—Second semester. One lecture and two laboratory periods a week. Prerequisites, Tex. 100, Organic Chemistry. Laboratory fee, \$3.00.

Individual experimental problems in textiles.

Tex. 102. Textile Testing (3)—Second semester. Three laboratory periods a week. Prerequisite, Tex. 100. Laboratory fee, \$3.00.

The theory of textile testing methods, the repeated use of physical and chemical testing, the interpretation of the data, and the presentation of the findings.

Tex. 105. Consumer Problems in Textiles (3)—First and second semesters. Three lectures a week. Prerequisite, Tex. 1, or equivalent. Laboratory fee, \$3.00.

Study of textiles from the consumer point of view for personal, household and institutional use. Evaluation of such textiles through analysis of comparison shopping, laboratory tests, survey of literature and field trips.

Tex. 108. Decorative Fabrics (2)—First semester. Two lectures a week. Laboratory fee, \$3.00.

Study of historic and contemporary fabrics and laces with analysis of designs and techniques of decorating fabrics.

Clo. 120. Draping (3)—First semester. Three laboratory periods a week. Prerequisites, Clo. 21, Clo. 122. Laboratory fee, \$3.00.

Demonstrations and practice in creating costumes in fabrics on individual dress forms; modeling of garments for class criticism.

Clo. 122. Tailoring (2)—First and second semesters. Two laboratory periods a week. Prerequisite, Clo. 21. Laboratory fee, \$3.00.

Construction of tailored garments, requiring professional skill.

Clo. 123. Children's Clothing (2)—First semester. Two laboratory periods a week. Prerequisite, Clo. 20, or equivalent. Laboratory fee, \$3.00.

Children's clothing from the standpoint of age, health, beauty, economy and personality; development of original designs.

Clo. 124. Projects and Readings in Textiles and Clothing (2)—First semester. Two lectures a week. Prerequisites, Clo. 120, Tex. 100. Laboratory fee, \$3.00.

Analysis of wardrobe planning preparatory to the job situation; grooming as related to the college girl—to the job holder; survey of job opportunities in the field; special projects.

Clo. 125. Costume Draping (3)—Second semester. Three two-hour laboratory periods a week. Prerequisite, Pr. Art 20 or consent of department. Laboratory fee, \$3.00.

By means of draping in fabrics on a form the development of costumes both historic and contemporary for specific needs, purposes and occasions. Consideration of fabric, line and color are integral part of the work.

Clo. 126. Fundamentals of Fashion (2, 3)—Second semester. Prerequisite, Clo. 120. Laboratory fee, \$3.00.

Fashion history; current fashions, how to interpret and evaluate them; fashion show techniques; fashion promotion. The course includes oral and written reports, group projects, panel discussions and field trips.

Clo. 127. Apparel Design (3) Second semester. One lecture and two laboratory periods a week. Prerequisite, Clo. 120. Laboratory fee, \$3.00.

The art of costuming; trade and custom methods of clothing design and construction; advanced work in Draping, Pattern Design and/or Tailoring with study of the interrelationship of these techniques.

Clo. 128. Home Furnishings (3)—First and second semesters. Three laboratory periods a week. Prerequisite, Tex. 1, Clo. 20, or consent of instructor. Laboratory fee, \$3.00.

Selection of fabrics for home and institutional furnishings; care and repair of such furnishings; custom construction of slip covers, draperies, bedspreads; refinishing and upholstering a chair.

For Graduates

Tex. 200. Special Studies in Textiles (2-4)—Second semester. Laboratory fee, \$3.00.

Clo. 220. Special Studies in Clothing (2-4)—First semester. Laboratory fee, \$3.00.

Tex. and Clo. 230. Seminar (1)—First and second semesters. Laboratory fee, \$3.00.

Tex. and Clo. 231. Research (4-6)—First and second semesters. Laboratory fee, \$3.00.

Tex. and Clo. 232. Economics of Textiles and Clothing (3)—Second semester. Laboratory fee, 3.00.

PRACTICAL ART AND CRAFTS

Professor Curtiss; Associate Professor Cuneo; Instructors Eno, Longeley;
Junior Instructors Elliott, Hodgson; Lecturer Davis

The Department of Practical Art reserves the right to retain one art problem from each student, from each class, for illustrative purposes; however, it will retain only such problems as are need by the department.

Pr. Art O. Professional Lectures (O)—Second semester.

Lectures by current merchandisers, designers, occupational therapists, and educators.

A. Practical Art

Pr. Art 1. Design (3)—First and second semesters. Laboratory fee, \$3.00.

Art expression through the use of material such as opaque water color, wet clay, colored chalk, and lithograph crayon, which are conducive to free techniques. Elementary lettering, action figures, abstract design and general composition study. Consideration of art as applied to daily living.

Pr. Art 2. Survey of Art History (2)—First and second semesters. Laboratory fee, \$3.00.

A rapid survey of art, from prehistoric times to the twentieth century, showing the great human movements and art ideals which each period has reflected. Emphasis is given to domestic architecture, furnishings, and costume, and to the philosophy and significance of art in today's living.

Pr. Art. 3. Silk Screen Printing (2)—First and second semesters. Two laboratory periods a week. Prerequisite: Pr. Art 1, or equivalent. Laboratory fee, \$3.00.

Silk screening on paper and on fabric. Original design is stressed.

Pr. Art. 4. Three-dimensional Design (2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00.

Abstract and symbolic design emphasizing mass, volume, and depth in construction problems, which utilize paper, cork, screen, wire, thin sheet metal, fabric, wood, plastics, etc. This course stimulates resourcefulness and imagination in design.

Pr. Art 20. Costume Design (3)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisite, Pr. Art 1, or equivalent.

Clothing selection with relation to personality. Adaptation of changing fashions to the individual. Designing of costumes in mediums such as Conte and lithograph crayon, transparent and opaque water color, soft pencil, India ink, and three-dimensional materials. A minimum of fashion figure drawing. Survey of historic costume and of the fashion industry.

Pr. Art 21, 22. Action Drawing (2, 2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00. Prerequisite, Pr. Art 1, or equivalent.

Quick sketching of live model, from poses and action. This course is basic for costume illustration, advertising and mural painting. Pr. Art 21 prerequisite to Pr. Art 22.

Pr. Art 30. Typography and Lettering (3)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisite, Pr. Art 1, or equivalent.

A study of typography, hand lettering, and their application. Brief survey of processes of reproduction.

Pr. Art 38, 39. Photography (2, 2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Consent of the instructor.

Experimental effects in photography with special emphasis upon pictures for teaching, advertising, display, periodicals, murals and scientific recording. It is advisable for each student to have his own camera.

Pr. Art 40, 41. Interior Design (1, 3)—First semester, one laboratory per week; second semester, three laboratory periods per week. Laboratory fee, on 41 only, \$3.00. Prerequisites, Pr. Art 1, 2, to precede or parallel Pr. Art 40.

Analysis of interiors as backgrounds for various personalities. Study of good and poor interiors. Trips to historic homes, a furniture factory, and retail house furnishing establishments. Original floor plans and wall elevations drawn to scale and rendered in color, considering family life.

B. Crafts

Cr. 2. Simple Crafts (2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00.

Creative art expressed in clay modeling, plaster carving, thin metal working, paper sculpture and finger weaving. Emphasis is laid upon inexpensive materials and tools and simple techniques which can be pursued in the home.

Cr. 3. Creative Art Inspired by Primitive Art (2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00.

Modern design produced after the study of vigorous primitive art as found in the prehistoric art of Spain, France and the southwestern part of the United States; archaic Mesopotamia, Egypt and Greece; Mayan, Aztec and Peruvian cultures; past and present primitive tribes; provincial and peasant groups. Linoleum block printing, textile painting, wood burning.

Cr. 5 Puppetry (3)—Second semester. Four laboratory periods a week. Laboratory fee, \$3.00.

Making of marionettes and production of simple puppet shows. Valuable as a teaching, advertising, or recreational medium.

Cr. 20, 21. Ceramics (2, 2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisite, Pr. Art 1 or Cr. 2, if possible.

Elementary clay sculpture and pottery making; simple glaze effects. Good design is stressed.

Cr. 30, 31. Metalry (2, 2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisite, Pr. Art 1 or Cr. 2, if possible.

Etching, repousse, and sawed filigree in metal such as copper, aluminum, brass, pewter and German silver. Good design is stressed.

Cr. 40, 41. Weaving (2, 2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisite, Pr. Art 1, if possible.

Hand weaving on table and floor looms. Good color, texture, and general design are stressed.

For Advanced Undergraduates and Graduates

Pr. Art 100, 101. Mural Design (2, 2)—Second semester. Two laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Pr. Art 1, 2, 21, or consent of the instructor.

Group and individual expression serving two types of objectives: temporary murals for the public schools developed from classroom study and rendered in color chalk or opaque water color on wrapping paper; murals for permanent architectural decoration considering propriety to setting and rendered in oil paint, gouache, fresco, or mosaic. Brief study of civilization's use of murals. Trips to nearby murals having social significance.

Pr. Art 120, 121. Costume Illustration (2, 2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Pr. Art 1, 20, and 21, 22, if possible.

Advanced techniques in rendering of fashion illustration. Experience in use of Ben Day and Craftint. Organization of fashion shows.

Pr. Art 124, 125. Individual Problems in Costume (2, 2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Pr. Art 1, 20, 120, 121, and permission of the instructor.

Advanced problems in costume design or costume illustration for students who are capable of independent work.

Pr. Art 132. Advertising Layout (2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Pr. Art 1, 20, 30.

Rough layouts and finished advertisements utilizing lettering, type specifications, and illustration. Air brush used in large work.

Pr. Art 134, 135. Individual Problems in Advertising (2, 2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Pr. Art 1, 20, 30, 120, 132, or equivalent, and permission of the instructor.

Advanced problems in advertising for students who are capable of independent work.

Pr. Art 136. Display (2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Pr. Art 1, 20, 30.

Practice in effective display for teaching and for merchandising. Cooperation with retail establishments.

Pr. Art 138. Advanced Photography (2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Pr. Art 38, 39, or consent of the instructor.

Individual problems in photography for teaching, advertising, displaying, periodicals, murals and scientific recording. It is advisable for each student to have his own camera.

Pr. Art 142, 143. Advanced Interior Design (2, 2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Pr. Art 1, 40, 41, or equivalent.

Designing of rooms and furnishings: scale drawing and color rendering in plan, elevation and perspective, or making of maquettes. Study of furniture manufacture and merchandising. Planning of exhibition rooms or houses when possible.

Pr. Art 144, 145. Individual Problems in Interior (2, 2)—First and second semesters. Two laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Pr. Art 1, 40, 41, 142, 143, and permission of the instructor.

Advanced problems in interior design or construction for students who are capable of independent work.

Pr. Art 198. Store Experience (3)—160 clock hours, or 20 continuous eight-hour days, summer following the Junior Year, Practical Art curriculum.

Selling, buying, advertising, or executive work done under supervision in a specified department store or studio. Arrangements to be made with the Head of the Department of Practical Art early in the spring semester, Junior year.

Cr. 102. Creative Crafts (2-4)—Summer session. Daily laboratory periods. Laboratory fee, \$3.00. Prerequisite: permission of the instructor.

Interests of the persons enrolled will determine the crafts to be pursued. **Suggested:** block printing, wood burning, crayon decoration, paper sculpture, clay modelling, metalry, weaving. Excellent for teachers and for directors of recreation centers.

Cr. 120, 121. Advanced Ceramics (2, 2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Cr. 20, 21.

Advanced techniques in clay sculpture and pottery making; preparation of glazes and handling of the kiln.

Cr. 124, 125. Individual Problems in Ceramics (2, 2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Cr. 20, 21, 120, 121, and permission of the instructor.

Advanced problems in ceramics. For students who are capable of independent work.

Cr. 130, 131. Advanced Metalry (2, 2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Cr. 30, 31.

Advanced techniques in metalry including soldering, stone-setting, and fine etching.

Cr. 134, 135. Individual Problems in Metalry (2, 2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Cr. 30, 31, 130, 131, and permission of the instructor.

Advanced problems in metalry for students who are capable of independent work.

Cr. 140, 141. Advanced Weaving (2, 2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Cr. 40, 41.

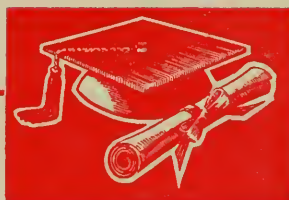
Advanced techniques in weaving.

Cr. 144, 145. Individual Problems in Weaving (2, 2)—First and second semesters. Three laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, Cr. 40, 41, 140, 141, and permission of the instructor.

Advanced problems in weaving for students who are capable of independent work.

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SEPARATE CATALOGS

At College Park

Individual catalogs of colleges and schools of the University of Maryland at College Park may be obtained by addressing the Office of University Relations, University of Maryland, College Park, Md.

These catalogs and schools are:

1. General Information
2. College of Agriculture
3. College of Arts and Sciences
4. College of Business and Public Administration
5. College of Education
6. College of Engineering
7. College of Home Economics
8. College of Military Science
9. College of Physical Education, Recreation and Health
10. College of Special and Continuation Studies
11. Summer School
12. Graduate School

At Baltimore

Individual catalogs for the professional schools of the University of Maryland may be obtained by addressing the Deans of the respective schools at the University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland. The professional schools are:

13. School of Dentistry
14. School of Law
15. School of Medicine
16. School of Pharmacy
17. School of Nursing

At Heidelberg

The catalog of the European Program may be obtained by addressing the Dean, College of Special and Continuation Studies, College Park, Maryland.

1957-1958



UNIVERSITY OF MARYLAND

THE COLLEGE OF

**military
science**

and the **department of air science**

AT COLLEGE PARK



IMPORTANT

THE PROVISIONS of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

GENERAL INFORMATION

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, societies and special clubs, the University band, student publications, University Post Office and Supply Store, write to the Editor of Publications for the General Information issue of the Catalog.

See Outside Back Cover for List of Other Catalogs

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BOARD OF REGENTS AND

MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

A regular meeting of the Board is held the last Friday in each month, except during the months of July and August.

1957-58 CALENDAR

First Semester

1957

September 17-20
September 23
November 27
December 2
December 21

Tuesday-Friday
Monday
Wednesday after last class
Monday, 8 A.M.
Saturday after last class

Registration, first semester
Instruction begins
Thanksgiving recess begins
Thanksgiving recess ends
Christmas recess begins

1958

January 6
January 20
January 21
January 22-29

Monday, 8 A.M.
Monday
Tuesday
Wednesday-Wednesday, inc.

Christmas recess ends
Charter Day
Pre-Examination Study Day
First Semester examinations

Second Semester

February 4-7
February 10
February 22
March 25
April 3
April 8
May 15
May 28
May 29-June 6
May 30
June 1
June 7

Tuesday-Friday
Monday
Saturday
Tuesday
Thursday after last class
Tuesday, 8 A.M.
Thursday
Wednesday
Thursday-Friday, inc.
Friday
Sunday
Saturday

Registration, second semester
Instruction begins
Washington's birthday, holiday
Maryland Day
Easter recess begins
Easter recess ends
Military Day
Pre-Examination Study Day
Second Semester examinations
Memorial Day, holiday
Baccalaureate exercises
Commencement exercises

Summer Session, 1958

June 23
June 24
August 1

Monday
Tuesday
Friday

Registration, Summer Session
Summer Session begins
Summer Session ends

Short Courses

June 16-21
August 4-9
September 2-5

Monday-Saturday
Monday-Saturday
Tuesday-Friday

Rural Women's Short Course
4-H Club Week
Firemen's Short Course



College of MILITARY SCIENCE

JAMES REGAN, JR., Acting Dean of the College.
Colonel, United States Army, Retired.

JOSEPH C. FEHR, Assistant Professor.
Colonel, United States Air Force.

Department of AIR SCIENCE

FACULTY

ROBERT E. KENDIG, Professor of Air Science, Air Force R.O.T.C.
Colonel, United States Air Force.
B.A., College of William & Mary, 1939.

LIONEL R. BOOTH, Associate Professor of Air Science, Air Force R.O.T.C.,
Maryland State College.
Major, United States Air Force.
B.A., Catholic University of America, 1942.

FLOYD K. SHOFNER, Assistant Professor of Air Science, Air Force R.O.T.C.
Lieutenant Colonel, United States Air Force.
A.A., Lamar Junior College, 1941.

DOUGLAS L. SWORN, Assistant Professor of Air Science, Air Force R.O.T.C.
Major, United States Air Force.
B.S., University of Washington, 1940.

GEORGE K. FORD, Assistant Professor of Air Science, Air Force R.O.T.C.
Captain, United States Air Force.
B.S., University of Maryland, 1956.

PETER HAMEL, Assistant Professor of Air Science, Air Force R.O.T.C.
Captain, United States Air Force.
B.A., Hope College, 1941.

SAMUEL HAMMERMAN, Assistant Professor of Air Science, Air Force R.O.T.C.
Captain, United States Air Force.
B.S., Teachers College, 1943.

CLAYTON E. HOLST, Assistant Professor of Air Science, Air Force R.O.T.C.
Captain, United States Air Force.
B.E., Mankato State Teachers College, 1939.

RUSSELL S. RYLAND, Assistant Professor of Air Science, Air Force R.O.T.C.
Captain, United States Air Force.
B.A., Birmingham Southern College, 1950.

SILAS G. UPCHURCH, Assistant Professor of Air Science, Air Force R.O.T.C.
Captain, United States Air Force.
B.S., University of Maryland, 1956.

MARY W. MESSINGER, Assistant Professor of Air Science, Air Force R.O.T.C.
Captain, United States Air Force.
B.S., Boston University, 1950.

- LOUIS H. CHANEY, Assistant Professor of Air Science, Air Force R.O.T.C.
Lieutenant Colonel, United States Air Force.
A.B., Indiana University, 1933; M.S., Butler University, 1940.
- JOHN P. O'REAGAN, Associate Professor of Air Science, and Commandant of Cadets, Air Force R.O.T.C.
Lieutenant Colonel, United States Air Force.
B.S., Georgetown University, 1950.
- MATTHEW A. LANDRY, Assistant Professor of Air Science, Air Force R.O.T.C.
Lieutenant Colonel, United States Air Force.
B.S., Rice Institute, 1940.
- JOSEPH B. BOOTH, Assistant Professor of Air Science, Air Force R.O.T.C.
Lieutenant Colonel, United States Air Force.
B.S., University of Alabama, 1948.
- BERNARD RIELEY, Assistant Professor of Air Science, Air Force R.O.T.C.
Captain, United States Air Force.
- GROVER C. OAKLEY, JR., Assistant Professor of Air Science, Air Force R.O.T.C.
Major, United States Air Force.
B.S., University of Maryland, 1957.
- HUGH S. ANDREW, Assistant Professor of Air Science, Air Force R.O.T.C.
Captain, United States Air Force.
B.S., University of Colorado, 1950.
- WILLIAM J. CAMPBELL, Assistant Professor of Air Science, Air Force R.O.T.C.
Chief Warrant Officer, United States Air Force.
B.S., University of Maryland, 1955.
- JOHN W. CASHION, Instructor, Air Force R.O.T.C.
Master Sergeant, United States Air Force.
- ROBERT E. MCCULLOUGH, Instructor, Air Force R.O.T.C., Maryland State College.
Master Sergeant, United States Air Force.
- WILLIAM L. PLUNK, Instructor, Air Force R.O.T.C.
Master Sergeant, United States Air Force.
- ROBERT W. WILT, Instructor, Air Force R.O.T.C.
Master Sergeant, United States Air Force.
- GEORGE W. BURKE, Instructor, Air Force R.O.T.C.
Technical Sergeant, United States Air Force.
- JOSEPH S. JACKSON, Instructor, Air Force R.O.T.C.
Technical Sergeant, United States Air Force.
- HOWARD V. DOVE, JR., Instructor, Air Force R.O.T.C.
Staff Sergeant, United States Air Force.
- NORMAN C. GUPTON, Instructor, Air Force R.O.T.C.
Staff Sergeant, United States Air Force.
- CONNOR A. ISGETT, JR., Instructor, Air Force R.O.T.C.
Staff Sergeant, United States Air Force.
- JOHN E. SCHMIDT, JR., Instructor, Air Force R.O.T.C.
Staff Sergeant, United States Air Force.
- ALFRED E. WALL, Instructor, Air Force R.O.T.C.
Staff Sergeant, United States Air Force.

COLLEGE OF MILITARY SCIENCE

THE College of Military Science offers training for students who wish professional preparation in the field of Military Science or the field of Military Affairs. The normal length of the curriculum is four years.

ADMISSION AND COSTS

All students desiring to enroll in the College of Military Science must apply to the Director of Admissions of the University of Maryland at College Park. They must now hold or have held in the past a commission in one of the Armed Forces or possess those qualities and attributes, both physical and mental, which are desirable in a commissioned officer.

Prerequisites for admission include 4 units of English, 1 unit of mathematics, 1 unit of biological and physical sciences, and 1 unit of history and social sciences. In addition, the following are strongly recommended: 2 units of algebra, 1 unit of plane geometry, $\frac{1}{2}$ unit of trigonometry, $\frac{1}{2}$ unit of solid geometry, 1 unit of physics, 1 unit of chemistry or another science, 2 units of foreign languages, 2 units of history and social sciences.

Actual annual costs of attending the University include: \$165.00 fixed charges; \$77.00 special fees; \$400.00 board; \$140 to \$170 lodging for Maryland residents, or \$180 to \$220 for residents of other States and Countries; laboratory fees which vary with the laboratory courses pursued. A matriculation fee of \$10.00 is charged all new students. A charge of \$250.00 is assessed to all students who are non-residents of the State of Maryland. Students taking Basic R.O.T.C. are assessed a fee of \$2.50 per year to cover cost of cleaning uniforms. For a more detailed statement of these costs, write to the Director of University Relations for a copy of the General Information issue of the catalog.

GENERAL INFORMATION

For information in reference to the following, write to the Director of University Relations for the General Information issue of the catalog: University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, societies and special clubs, the University band, student publications, University Post Office and Supply Store.

MILITARY INSTRUCTION

All male students, unless specifically exempted under University rules, are required to take Basic Air Force R.O.T.C. training for a period of two

years. The successful completion of this course is a prerequisite for graduation and it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of military training will be required to complete the course or take it until graduation, whichever occurs first.

Selected students who take the Advanced Air Force R.O.T.C. Course during their Junior and Senior years are given a commission in the United States Air Force Reserve or a Certificate of Completion in lieu of a commission at time of graduation.

For further details concerning the requirements for Military Instruction, write the Director of University Relations for a copy of the General Information issue of the catalog.

THE PROGRAM IN AMERICAN CIVILIZATION

The University considers that it is important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American Civilization. This program is also designed to provide the student with a general educational background.

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the Program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

For further information concerning the program in American Civilization see the General Information catalog.

CURRICULA

Two curricula are offered by the College of Military Science—the Curriculum in Military Science and the Curriculum in Military Affairs. These curricula lead to the degree of Bachelor of Science, providing the student maintains a grade average of not less than "C." The requirement for graduation is 136 semester hours including Basic Air Force R.O.T.C. and physical activities.

The controlling objective of the curriculum in Military Science is to educate men who desire to follow a military career. As a prerequisite for completion of this curriculum, a student must have satisfactorily held or presently hold a commission in one of the Armed Forces, or possess those physical and mental requirements which can lead to a commission in one of the Armed Forces. The completion of the Advanced Air Force R.O.T.C. courses also satisfies this requirement.

The primary purpose of the curriculum in Military Affairs is to offer to those interested students a broad education in subjects pertinent to military and public affairs, with emphasis on government and politics, history and military science.

Common Freshman and Sophomore Years

<i>Freshman Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
¶Eng. 1, 2—Composition and Reading in American Literature....	3	3
*Soc. 1—Sociology of American Life.....	....	3
*G. & P. 1—American Government.....	3	....
**Speech 1, 2—Public Speaking	2	2
Math. 10, 11—Algebra, Trigonometry, Analytic Geometry, or Math. 5, 6—General Mathematics, Mathematics of Finance....	3	3
Modern Language—(One language for two years' study).....	3	3
†A. S. 1, 2—Basic Air Force R. O. T. C.....	3	3
†Physical Activities	1	1
Total	18	18

<i>Sophomore Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
*Eng. 3, 4 or 5, 6—Composition and Reading in World Literature	3	3
Hist. 5, 6—History of American Civilization.....	3	3
**Speech 5, 6—Advanced Public Speaking.....	2	2
*Physics 1, 2—Elements of Physics.....	3	3
Modern Language—(Second year).....	3	3
†A. S. 3, 4—Basic Air Force R. O. T. C.....	3	3
†Physical Activities	1	1
Total	18	18

*Credit by examination may be permitted for these courses upon successful completion of the college level General Educational Development Tests. Students who receive 12 credit hours in English by this means are required to complete English 8 or English 14. The credit earned in either of these courses may be used as electives.

**Adult off-campus students may substitute Speech 103 and 104, Speech Composition and Rhetoric (3, 3) for Speech 1, 2, (2, 2), and Speech 5, 6, (2, 2). The additional two hours may be credited toward electives.

†Credit allowed for equivalent service in the Armed Forces. Waived for adult off-campus students.

¶Courses in English 1, 2, 3, 4, 5, 6; Sociology 1, Government and Politics 1, History 5, 6 are subject to variation in accordance with the American Civilization program. See General Information catalog.

Military Science Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
††Speech 127, 128—Military Speech and Command.....	2	2
Speech 133—Staff Reports, and Briefings and Visual Aids.....	....	3
Econ. 31, 32—Principles of Economics.....	3	3
Soc. 2—Principles of Sociology.....	3	....
††A. S. 101, 102—Advanced Air Force R. O. T. C.....	3	3
Electives	6	6
Total	17	17

Senior Year

M. S. 151—Military Logistics.....	....	3
††M. S. 152—Military Leadership.....	....	3
M. S. 153—Military Policy of the United States.....	3	....
M. S. 154—Management of the Military Establishment.....	3	....
One of the following :		
G. & P. 101—International Political Relations.....		....
G. & P. 102—International Law.....		....
G. & P. 106—American Foreign Relations.....	3	....
G. & P. 154—Problems of World Politics.....		....
G. & P. 197—Comparative Governmental Institutions.....		....
A. S. 103, 104—Advanced Air Force R. O. T. C.....	3	3
Electives	3	6
Total	15	15

Electives must be taken under advisement and in terms of the objectives of this curriculum.

The Military Affairs Curriculum

Junior Year

Speech 133—Staff Reports, Briefings and Visual Aids.....	3	....
Econ. 31, 32—Principles of Economics.....	3	3
Soc. 2—Principles of Sociology.....	....	3
G. & P. 101—International Political Relations.....	3	....
G. & P. 102—International Law.....	....	3
Hist. 127, 128—Diplomatic History of the United States.....	3	3
Electives	6	3
Total	18	15

††Credit allowed to those holding Regular, Reserve or National Guard commissions. Students who do not wish to present these subjects for this degree and who have completed acceptable Service Extension Courses at the Officer Candidate level or its equivalent, may substitute therefor an equivalent number of hours in Government and Politics and History, in courses numbered 100 or above, of which twelve hours must be in one field.

††Students with experience may be relieved of this subject and pursue advanced studies in lieu thereof. Credit is allowed to those students having had one (1) year or more on active duty status, as a commissioned officer in the Regular, Reserve or National Guard.

<i>Senior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
M. S. 151—Military Logistics .....	....	3
M. S. 153—Military Policy of the United States.....	3	....
G. & P. 106—American Foreign Relations.....	3	....
G. & P. 154—Problems of World Politics.....	....	3
Hist. 175, 176—Europe in the World Setting of the Twentieth Century	3	3
Geog. 190—Political Geography .....	....	3
Electives	7	3
Total	16	15

Electives must be taken under advisement and in terms of the objectives of this curriculum.

GRADUATE STUDIES

A student wishing to pursue graduate studies upon the completion of the Bachelor of Science degree from this college should plan to use the electives in his curriculum as a major in some one of the departments open to him, such as, history, government and politics, sociology, economics, and the like. This major must be arranged under the advisement of the head of the department concerned and the Dean of the College of Military Science.

DESCRIPTION OF COURSES

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of hours credit is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program.

M. S. 151. Military Logistics (3).

First and second semesters. A study of logistics, including (a) the principles governing the national economic activities and resources necessary to support the armed forces (b) study of the principles and fundamentals of the elements of military logistics, including supply maintenance, transportation, hospitalization and evacuation, construction and logistics planning (c) research by the student on a selected phase of logistics.

M. S. 152. Military Leadership (3).

First semester. Three one-hour classroom periods. A study of the basic requisites, principles and attributes of good military leadership, including both the practical and psychological approaches to the subject. Individual differences in human behavior and the personal element in successful leadership are stressed.

M. S. 153. Military Policy of the United States (3).

First and second semesters. Prerequisites, History 5 and 6. A study of our military history and our military concepts and policies, and their effects upon national objectives, and national policies. A continuing analysis of all the factors which influence national policies, particularly military policy; an evaluation of the lessons to be learned from this historical study.

M. S. 154. Management of the Military Establishment (3).

First and second semesters. Prerequisite, M. S. 151. A study of the need for intelligent and scientific management of the Armed Forces, including a consideration of the background of modern management, the development of the science of management and the emphasis on post-war management of the military establishment. A detailed evaluation of the current thoughts and philosophies of military management.

DEPARTMENT OF AIR SCIENCE

Colonel Robert E. Kendig, USAF,
Professor of Air Science

The Department of Air Science provides, in Basic AFROTC, a foundation for leadership and air age citizenship. The second two years of instruction, Advanced AFROTC (together with four weeks of summer training at the end of the junior year), build upon the foundation in further developing upper classmen who are to become Air Force Officers.

Instruction in military science and tactics has been an important phase of the College Park division of the University of Maryland since 1856. In 1864 the General Assembly of Maryland accepted the provisions of the Act of Congress of 1862 whereby public lands were donated to the States providing colleges in which a course of military training was maintained. Until 1916 the institution was a military school. After the first World War the military training was reorganized and given as specified in the Acts of Congress of 1916 and 1920, as amended, which are commonly known as the National Defense Acts. Under these laws the Reserve Officer Training Corps is organized to provide basic training and to offer advanced training leading to a commission in the United States Air Force Reserve. All male students, unless specifically exempted, under University rules are required to take Basic AFROTC training for a period of two years. This is a prerequisite for graduation and must be taken by all eligible students in their first two years of attendance whether they intend to graduate or not. Students of the University, regardless of the college in which registered, who successfully complete the Basic Course, Air Force Reserve Officers Training Corps, may apply for admission in the Advanced Course.

The mission of the Senior Division Reserve Officers' Training Corps is to produce junior officers who have the qualities and attributes essential to their progressive and continued development as officers in the United States Air Force. The major mission is the training of candidates for commissioned officer service as pilots and observers in the Reserve Components of the Air Force of the United States, i.e., the United States Air Force Reserve or the Air National Guard. In addition, the Senior Division, Air Force Reserve Officers Training Corps will provide the principal source for procurement of junior officers for the Regular Air Force since many of the Reserve Officers apply for and are appointed as Regular Officers.

Air Force personnel approved by the President of the University, are detailed by the Department of the Air Force to administer the program. Officers serve under appointment by the University as Professor or Assistant Professor and selected non-commissioned officers serve as Instructors.

The course of instruction leading to a commission as a second lieutenant is organized into a two-year Basic Course which all male students, except excused veterans and non-citizens, must take, and an elective two-year Advanced Course offered to students selected from among those eligible applicants. To those who do not desire to pursue the Advanced Course the Basic Course offers training in leadership, discipline, citizenship, and other subjects which will be of value to the individual should he be called into the Armed Forces.

The necessary training equipment including weapons, and technical material, is loaned to the University by the Department of the Air Force. Students in the Basic Course are issued uniforms without cost except for the \$2.50 per year fee required to cover cost of cleaning.

The Armory located East of the Administration Building has been declared by a Department of the Air Force inspector to be one of the finest buildings used for military instruction in the country. It contains clothing and ordnance storerooms, classrooms, offices, projection room, a ten point small bore gallery rifle range, and a drill floor 240 feet long by 120 feet wide. Drill field, parade grounds and other outdoor training activities are nearby.

Advanced Course

The primary object of the Advanced Course is to provide military instruction and systematic training to selected eligible students through the agency of educational institutions, to the end that they may qualify as United States Air Force Reserve Officers. It is intended to attain this objective in accordance with the terms of the contract during the time the students are pursuing their academic studies at the University.

Male students, prior to enrollment in the Advanced Course, must have satisfactorily completed the Basic Course or have received credit for it by virtue of his military service. Female students may elect to go into the Advanced training without having completed the Basic Course. The student must have indicated in writing his desire to undertake the course. Selection of stu-

dents in the Advanced Course will be made by the President of the University and the Professor of Air Science, as provided in Section 47c, National Defense Act. No applicant will be admitted to the Advanced Course who is less than fourteen or more than twenty-five years of age at the time of admission or who is not able to pass physical standards set forth in Air Force Manual 160-1. Applicants are also required to satisfactorily complete the Air Force Officer Qualifying Test.

WAF ROTC Program

Selected female students who complete the course of study prescribed for Advanced course cadets and receive a degree will be given a direct appointment in the Air Force Reserve. Female freshmen and sophomore students may pursue the AFROTC Basic Course. Completion of the Basic course is not a requirement for enrollment in the Advanced course under this Program. However, women with a Basic AFROTC Course background will be given priority in selection for Advanced AFROTC. Summer training during the summer following their junior year is also required for the Cadettes taking Advanced AFROTC. Female applicants for enrollment in the Advanced course must be between the ages of 17 and 26. Applicants must be unmarried and without dependents under 18 years of age. Written consent of the parent is required if the female applicant is under 21 years of age. Other requirements such as completing the Air Force Officer Qualifying Test and satisfactorily passing a physical examination for commissioning referred to above for male course applicants, also apply to female applicants. All female applicants for Advanced AFROTC who satisfactorily meet the requirements for Advanced course training will be enlisted in the Air Force Reserve and will receive training pay.

Program of Instruction

In the two years of the Basic Course the instruction will consist of four (4) hours per week, two (2) hours of classroom instruction, and two (2) hours of drill. The Advanced Course will consist of five (5) hours per week, three (3) hours per week of classroom instruction, and two (2) hours of drill. The number of drills will be curtailed for all students during the inclement season at the discretion of the Professor of Air Science. Special formations may be held as the PAS may direct.

Uniforms

All cadets must appear in proper uniform at all military drill formations and at such other times as the PAS may designate.

Uniforms for cadets in the Basic Course are furnished by the University of Maryland. They are purchased from the Federal Government on an allowance provided by the United States Air Force. The uniforms are the regulation uniforms of the United States Air Force, with certain distinguishing features. Such uniforms must be kept in good condition by the cadets. The uniforms will not be worn in part, nor used while the wearer is engaged in athletic

activity. The uniforms issued to Basic Course Cadets will be returned to the University of Maryland Representative in the Air Science Department at the end of the year, or before, if a student severs his connection with the Department.

The Advanced Course cadets will wear an officer-type uniform, purchased on a Federal Government allowance. The WAF Cadettes will wear the regulation Air Force WAF uniform furnished by the United States Air Force.

Commutation

All members of the Advanced Course will receive a monetary allowance in lieu of subsistence, equivalent to the current value of the garrison ration, to be paid quarterly during the periods of enrollment in the Advanced Course, less the period of the Advanced Camp of four weeks. During this Camp the student will receive the pay of the seventh enlisted grade as well as travel pay to and from camp. The total period of commutation will not exceed 595 days for any cadet. This allowance may be paid in addition to benefits authorized by the GI Bill of Rights. WAF Cadettes will be paid in accordance with their reserve inactive duty training since they are enlisted in the Air Force Reserve.

Credits

Military instruction offered by the AFROTC is on a par with other university work, and the requirements of this department as to proficiency are the same as those of other departments. Academic elective credits are given in all colleges for the Advanced Air Force R.O.T.C. Course.

Students who have received military training at any other educational institution under the direction of officers detailed as Professor of Military Science and Tactics, Professor of Air Science, and Professor of Naval Science, may receive such credit as applicable Air Force Regulations allow.

Air Force Reserve Officer Training Corps Band

The AFROTC Band is composed of Basic Cadets who are members of the University of Maryland Band. Both the AFROTC Band and the University of Maryland Band function under the Department of Music. The Cadet Band practices during drill periods and plays for drills and military functions. Basic AFROTC uniforms are worn by band members while participating in the Cadet Band.

University and Air Force Reserve Officer Training Corps Rifle Teams

The University's rifle teams are under the supervision of the Department of Air Science. Rifle shooting at the University of Maryland is rated as a major sport activity, and varsity letters and sweaters are awarded to team members. The rifle teams representing this institution have achieved a high national standing for they have consistently placed in the top brackets in the National Intercollegiate Rifle Match. The Varsity Rifle Team won the

National Intercollegiate Championship in 1947, 1949, 1953, and 1954. The Intercollegiate record score of 1442 was established in 1953. The AFROTC Team has been a consistent winner in the William Randolph Hearst Trophy Match and the Secretary of the Air Force AFROTC Rifle Match. The teams have consistently won a very high percentage of the regularly scheduled postal and shoulder matches. Rifles and ammunition are furnished by the State and Federal Governments, and the rifle range in the Armory used by the team has been pronounced by officials of the National Rifle Association to be among the finest in the country.

Both a Varsity Team and a Freshman Team are placed in intercollegiate competition, with members of the latter team being awarded class numerals. Cadets on the AFROTC Rifle team receive badges, ribbons, and medals for their performance on the team.

DESCRIPTION OF COURSES

A. S. 1, 2. Basic Air Force ROTC (3, 3).

Two hour periods of Leadership, Drill and Exercise of Command. Three one-hour periods of class instruction. Subjects taught: Introduction to Air Force ROTC, Introduction to Aviation, Fundamentals of Global Geography, International Tensions and Security Organizations, Instruments of National Military Security.

A. S. 3, 4. Basic Air Force ROTC (3, 3).

Two one-hour periods of Leadership, Drill and Exercise of Command. Three one-hour periods of class instruction. Subjects taught: Elements of Aerial Warfare, Targets, Weapons, Aircraft, Air Ocean, Bases, Forces; Careers in USAF.

A. S. 101, 102. First Year Advanced Air Force ROTC (3, 3).

Two one-hour periods of Leadership, Drill and Exercise of Command. Three one-hour periods of class instruction. Subjects taught: Air Force Commander and Staff, Problem Solving Technique, Communications, Process and Air Force Correspondence, Military Law, Courts and Boards, Applied Air Science, Aircraft Engineering, Navigation and Weather.

A. S. 103, 104. Second Year Advanced Air Force ROTC (3, 3).

Two one-hour periods of Leadership, Drill and Exercise of Command. Three one-hour periods of class instruction. Subjects taught: Camp Critique, Principles of Leadership and Management (Seminar), Career Guidance, Military Aspects of World Political Geography, Military Aviation and the Art of War, Briefing for Commissioned Service.

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“E DUCATION does not mean teaching people what they do not know. It means teaching them to behave as they do not behave. It is not teaching the youth the shapes of the letters and the tricks of numbers, and then leaving them to turn their arithmetic to roguery and their literature to lust. It means, on the contrary, training them into the perfect exercise and kingly continence of their bodies and souls. It is painful, continual and difficult work to be done by kindness, by watching, by warning, by precedent, and by praise, but above all—by example.”—John Ruskin.

“In our country no man is worthy the honored name of statesman, who does not include the highest practicable education of the people in all his plans of administration.”—Horace Mann.

“Promote, then, as an object of primary importance institutions for the general diffusion of knowledge. In proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened.”—George Washington.

“The good education of youth has been esteemed by wise men in all ages as the surest foundation of the happiness both of private families and of commonwealths.”—Benjamin Franklin.

“The whole people must take upon themselves the education of the whole people and be willing to bear the expense of it.”—John Adams.

“If a nation expects to be ignorant and free in a state of civilization, it expects what never was and never will be.”—Thomas Jefferson.

“A popular government without popular information or the means of acquiring it, is but the prologue to a farce or a tragedy, or perhaps both.”
—James Madison

“An educated man is never poor and no gift is more precious than education.”—Abraham Lincoln.

“Without popular education no government which rests on popular action can long endure; the people must be schooled in the knowledge and in the virtues upon which the maintenance and success of free institutions depend.”
—Woodrow Wilson

“We have faith in education as the foundation of democratic government.”
—Franklin D. Roosevelt



SEPARATE CATALOGS

At College Park

Individual catalogs of colleges and schools of the University of Maryland at College Park may be obtained by addressing the Office of University Relations, University of Maryland, College Park, Md.

These catalogs and schools are:

1. General Information
2. College of Agriculture
3. College of Arts and Sciences
4. College of Business and Public Administration
5. College of Education
6. College of Engineering
7. College of Home Economics
8. College of Military Science
9. College of Physical Education, Recreation and Health
10. College of Special and Continuation Studies
11. Summer School
12. Graduate School

At Baltimore

Individual catalogs for the professional schools of the University of Maryland may be obtained by addressing the Deans of the respective schools at the University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland. The professional schools are:

13. School of Dentistry
14. School of Law
15. School of Medicine
16. School of Pharmacy
17. School of Nursing

At Heidelberg

The catalog of the European Program may be obtained by addressing the Dean, College of Special and Continuation Studies, College Park, Maryland.

1957-1958



UNIVERSITY OF MARYLAND

THE COLLEGE OF

**physical education
recreation
and health**

AT COLLEGE PARK



IMPORTANT

THE PROVISIONS of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

GENERAL INFORMATION

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, societies and special clubs, the University band, student publications, University Post Office and Supply Store; write to the Editor of Publications for the General Information issue of the Catalog.

See Outside Back Cover for List of Other Catalogs

Index on inside back cover.

VOLUME 9

MARCH 5, 1957

NO. 27

A University of Maryland Publication is published four times in January, February, March and April; three times in May; once in June and July; twice in August, September, October and November; and three times in December.

Re-entered at the Post Office in College Park, Maryland, as second class mail matter under the Act of Congress of August 24, 1912.



BOARD OF REGENTS AND

MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK, SR., Chairman, McCormick and Company, Inc., 414 Light Street, Baltimore 2	1957
EDWARD F. HOLTER, Vice-Chairman, The National Grange, 744 Jackson Place, N.W., Washington 6	1959
B. HERBERT BROWN, Secretary, The Baltimore Institute, 12 West Madison Street, Baltimore 1	1960
HARRY H. NUTTLE, Treasurer, Denton.....	1966
LOUIS L. KAPLAN, Assistant Secretary, 1201 Eutaw Place, Baltimore 17	1961
EDMUND S. BURKE, Assistant Treasurer, Kelly-Springfield Tire Com- pany, Cumberland	1959
WILLIAM P. COLE, JR., 100 West University Parkway, Baltimore 10	1958
THOMAS W. PANGBORN, The Pangborn Corporation, Pangborn Blvd., Hagerstown	1965
ENOS S. STOCKBRIDGE, 10 Light Street, Baltimore 2	1960
THOMAS B. SYMONS, Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	1963
C. EWING TUTTLE, 907 Latrobe Building, Charles and Read Streets, Baltimore 2	1962

Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

A regular meeting of the Board is held the last Friday in each month, except during the months of July and August.

OFFICERS OF THE ADMINISTRATION

WILSON H. ELKINS, President, University of Maryland.

B.A., University of Texas, 1932; M.A., 1932; B.Litt., Oxford University, 1936; D.Phil., 1936.

ALBIN O. KUHN, Assistant to the President of the University.

B.S., University of Maryland, 1938; M.S., 1939; Ph.D., 1948.

ALVIN E. CORMENY, Assistant to the President, in charge of Endowment and Development.

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

HARRY C. BYRD, President Emeritus, University of Maryland.

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.Sc., Western Maryland College, 1938.

HAROLD F. COTTERMAN, Dean of the Faculty of the University.

B.S., Ohio State University, 1916; M.A. Columbia University, 1917; Ph.D., American University, 1930.

RONALD BAMFORD, Dean of the Graduate School.

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; Ph.D., Columbia University, 1931.

GORDON M. CAIRNS, Dean of Agriculture.

B.S., Cornell University, 1936; M.S., 1938; Ph.D., 1940.

PAUL E. NYSTROM, Director, Agricultural Extension Service.

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

IRVIN C. HAUT, Director, Agricultural Experiment Station and Head, Department of Horticulture.

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.

LEON P. SMITH, Dean of the College of Arts and Sciences.

B.A., Emory University, 1919; M.A., University of Chicago, 1928; Ph.D., 1930; Diplome de l'Institut de Touraine, 1932.

J. FREEMAN PYLE, Dean of the College of Business and Public Administration.

Ph.B., University of Chicago, 1917; M.A., 1918; Ph.D., 1925.

MYRON S. AISENBERG, Dean of the School of Dentistry.

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, Dean of the College of Education.

B.S., University of Minnesota, 1930; M.A., 1936; Ph.D., University of Colorado, 1942.

***S. SIDNEY STEINBERG**, Dean of the College of Engineering.

B.E., Cooper Union School of Engineering, 1910; C.E., 1913; Registered Professional Engineer.

WILBERT J. HUFF, Director, Engineering Experiment Station and Chairman of the Division of Physical Sciences.

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; Ph.D., Yale University, 1917; D.Sc. (hon.), Ohio Northern University, 1927.

ROGER HOWELL, Dean of the School of Law.

B.A., Johns Hopkins University, 1914; Ph.D., 1917; LL.B., University of Maryland, 1917.

WILLIAM S. STONE, Dean of the School of Medicine and Director of Medical Education and Research.

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; Ph.D., (hon.), University of Louisville, 1946.

FLORENCE M. GIPE, Dean of the School of Nursing.

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; Ed.D., University of Maryland, 1952.

CLIFFORD G. BLITCH, Director of the University Hospital.

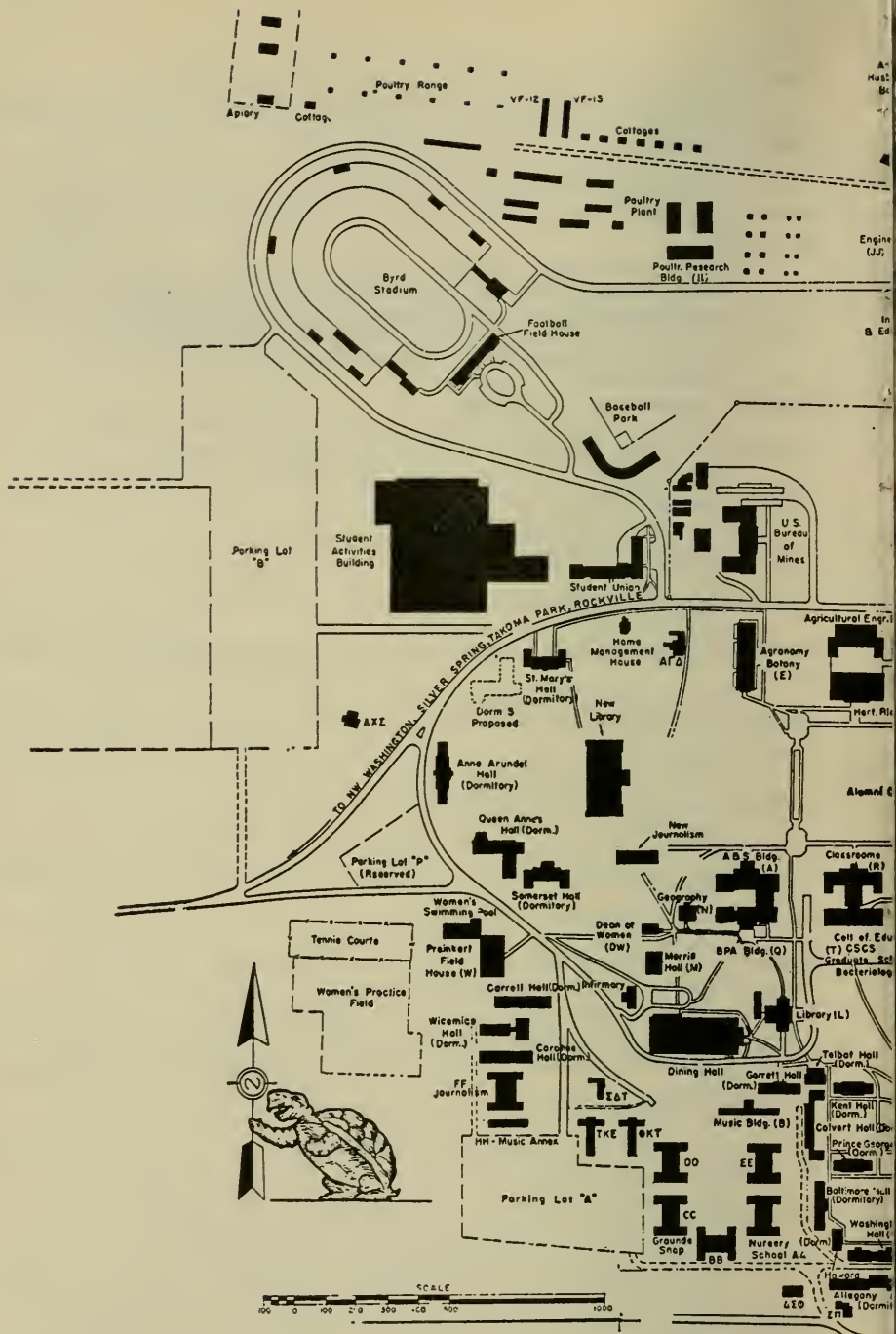
M.D., Vanderbilt University Medical School, 1928.

*Resigned January 31, 1957.

- EDWARD BARBER**, Dean of the College of Military Science.
B.S., Massachusetts Institute of Technology, 1935; M.A., Georgetown University, 1956; Brigadier General, U.S. Air Force.
- NOEL E. FOSS**, Dean of the School of Pharmacy.
Ph.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; Ph.D., 1933.
- LESTER M. FRALEY**, Dean of the College of Physical Education, Recreation, and Health.
B.A., Randolph-Macon College, 1928; M.A., 1937; Ph.D., Peabody College, 1939.
- RAY W. EHRENSBERGER**, Dean of the College of Special and Continuation Studies.
B.A., Wabash College, 1929; M.A., Butler University, 1930; Ph.D., Syracuse
- GEARY F. EPPLEY**, Director of Student Welfare and Dean of Men.
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
University, 1937.
- ADELE H. STAMP**, Dean of Women.
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.
- G. WATSON ALGIRE**, Director of Admissions and Registrations.
B.A., University of Maryland, 1930; M.S., 1931.
- NORMA J. AZLEIN**, Registrar.
B.A., University of Chicago, 1940.
- DAVID L. BRIGHAM**, Alumni Secretary.
B.A., University of Maryland, 1938.
- WILLIAM W. COBEY**, Director of Athletics.
A.B., University of Maryland, 1930.
- GEORGE O. WEBER**, Director and Supervising Engineer, Department of Physical Plant.
B.S., University of Maryland, 1933.
- GEORGE W. MORRISON**, Associate Director and Supervising Engineer Physical Plant. (Baltimore).
B.S., University of Maryland, 1927; E.E., 1931.
- C. WILBUR CISSEL**, Director of Finance and Business.
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
- HOWARD ROVELSTAD**, Director of Libraries.
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.
- GEORGE W. FOGG**, Director of Personnel.
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MCCARTNEY**, Director of University Relations.
B.A., University of Massachusetts, 1941.
- HARRY A. BISHOP**, Director of the Student Health Service.
M.D., University of Maryland, 1912.
- ROBERT E. KENDIG**, Professor of Air Science and Commandant of Cadets, Air Force R.O.T.C.
A.B., William and Mary College, 1939.

DIVISION CHAIRMEN

- CHARLES E. WHITE**, Chairman of the Lower Division.
B.S., University of Maryland, 1923; M.S., 1924; Ph.D., 1926.
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B.S. University of Maryland, 1926; M.S., 1927; Ph.D., 1937.
- ADOLF E. ZUCKER**, Chairman of the Division of Humanities.
B.A., University of Illinois, 1912; M.A., 1913; Ph.D., University of Pennsylvania, 1917.
- HAROLD C. HOFFSOMMER**, Chairman of the Division of Social Sciences.
B.S., Northwestern University, 1921; M.A., 1923; Ph.D., Cornell University, 1929.
- WILBERT J. HUFF**, Chairman of the Division of Physical Sciences.
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; Ph.D., Yale University, 1917; D.Sc. (hon.), Ohio Northern University, 1927.

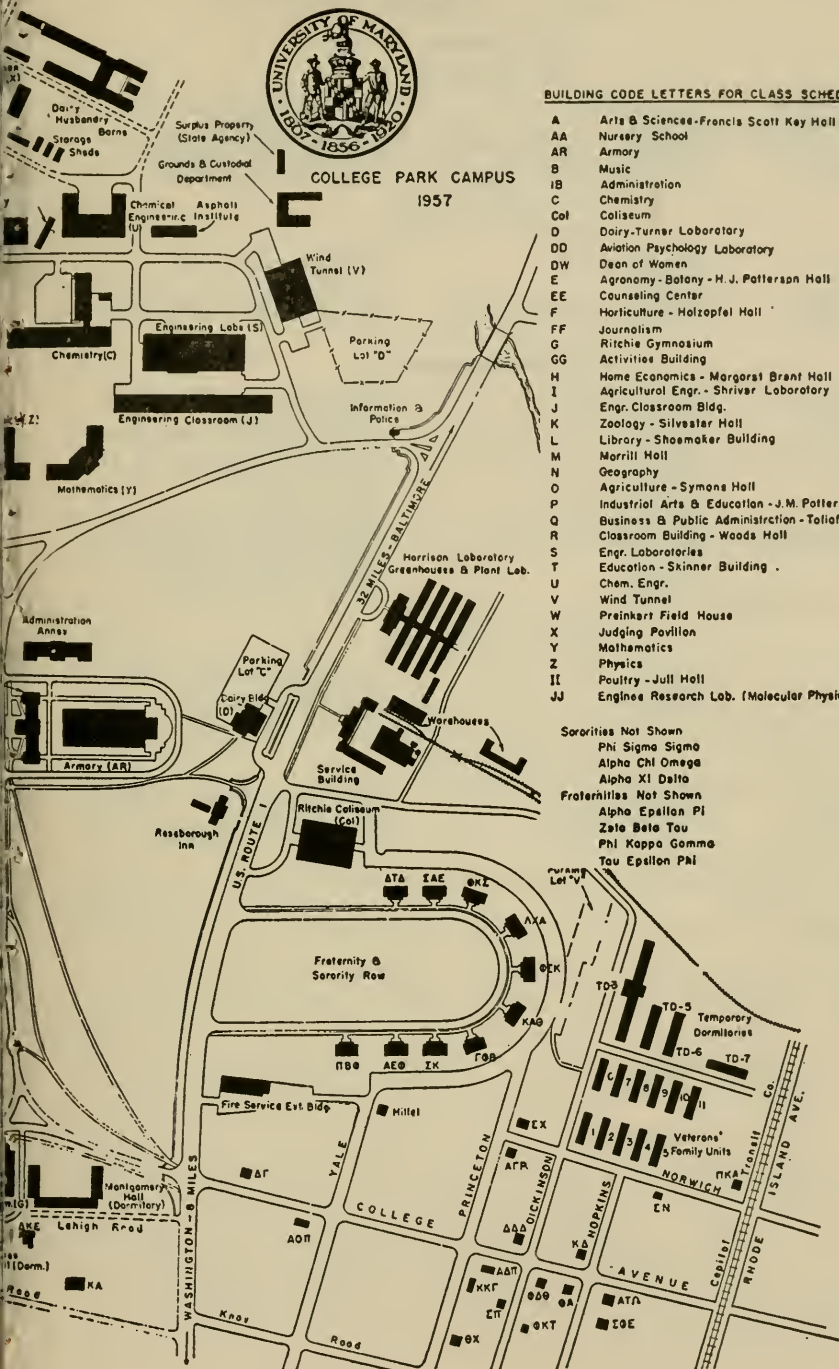


UNIVERSITY OF MARYLAND



COLLEGE PARK CAMPUS

1957



BUILDING CODE LETTERS FOR CLASS SCHEDULES

A	Arts & Sciences - Francis Scott Key Hall
AA	Nursery School
AR	Armory
B	Music
IB	Administration
C	Chemistry
Col	Coliseum
D	Dairy-Turner Laboratory
DD	Aviation Psychology Laboratory
DW	Dean of Women
E	Agronomy - Botany - H. J. Patterson Hall
EE	Counseling Center
F	Horticulture - Holzpfel Hall
FF	Journalism
G	Ritchie Gymnasium
GG	Activities Building
H	Home Economics - Margaret Brant Hall
I	Agricultural Engr. - Shriver Laboratory
J	Engr. Classroom Bldg.
K	Zoology - Sylvester Hall
L	Library - Shoemaker Building
M	Merrill Hall
N	Geography
O	Agriculture - Symons Hall
P	Industrial Arts & Education - J. M. Patterson Bldg.
Q	Business & Public Administration - Tallafarra Hall
R	Classroom Building - Woods Hall
S	Engr. Laboratories
T	Education - Skinner Building
U	Chem. Engr.
V	Wind Tunnel
W	Preinkart Field House
X	Judging Pavilion
Y	Mathematics
Z	Physics
II	Poultry - Jull Hall
JJ	Engineer Research Lab. (Molecular Physics)

Sororities Not Shown

Phi Sigma Sigma
Alpha Chi Omega
Alpha Xi Delta

Fraternities Not Shown

Alpha Epsilon Pi
Zeta Beta Tau
Phi Kappa Gamma
Tau Epsilon Phi

Civil
Defense
Training Bldg.

1957-58 CALENDAR

First Semester

1957

September 17-20	Tuesday-Friday	Registration, first semester
September 23	Monday	Instruction begins
November 27	Wednesday after last class	Thanksgiving recess begins
December 2	Monday, 8 A.M.	Thanksgiving recess ends
December 21	Saturday after last class	Christmas recess begins

1958

January 6	Monday, 8 A.M.	Christmas recess ends
January 20	Monday	Charter Day
January 21	Tuesday	Pre-Examination Study Day
January 22-29	Wednesday-Wednesday, inc.	First Semester examinations

Second Semester

February 4-7	Tuesday-Friday	Registration, second semester
February 10	Monday	Instruction begins
February 22	Saturday	Washington's birthday, holiday
March 25	Tuesday	Maryland Day
April 3	Thursday after last class	Easter recess begins
April 8	Tuesday, 8 A.M.	Easter recess ends
May 15	Thursday	Military Day
May 28	Wednesday	Pre-Examination Study Day
May 29-June 6	Thursday-Friday, inc.	Second Semester examinations
May 30	Friday	Memorial Day, holiday
June 1	Sunday	Baccalaureate exercises
June 7	Saturday	Commencement exercises

Summer Session, 1958

June 23	Monday	Registration, Summer Session
June 24	Tuesday	Summer Session begins
August 1	Friday	Summer Session ends

Short Courses

June 16-21	Monday-Saturday	Rural Women's Short Course
August 4-9	Monday-Saturday	4-H Club Week
September 2-5	Tuesday-Friday	Firemen's Short Course

College of

PHYSICAL EDUCATION, RECREATION

AND HEALTH

FACULTY

LESTER M. FRALEY, *Dean*

A.B., Randolph-Macon College, 1928; M.A., Peabody College, 1937; Ph.D., 1939.

RITA BERGMAN, Instructor of Health Education

B.S. in Ed., Ohio State University, 1946; M.S., University of Cincinnati, 1954;
Ed.D., Indiana University, 1956.

JOSEPHINE T. BRICA, Instructor in Physical Therapy.

Certificate in Physical Therapy, University of Texas Medical School, 1947; B.S.,
Loyola University, 1949.

WILLIAM R. CAMPBELL, Instructor of Physical Education and Head Swimming
Coach.

B.S., Springfield College, 1949; M.Ed., Springfield College, 1953.

FLORENCE S. CLAPHAM, Instructor of Physical Education

B.S., B.A., Texas State College for Women, 1950; M.A., Texas State College for
Women, 1951.

FRANK H. CRONIN, Associate Professor of Physical Education; Head Golf
Coach.

B.S., University of Maryland, 1946.

DOROTHY F. DEACH, Professor and Head, Department of Physical Education
for Women.

B.S., University of Illinois, 1931; M.S., 1932; Ph.D., University of Michigan, 1951.

JEAN DEYOE, Instructor of Physical Education.

B.S., Boston University, Sargent College, 1951; M.A., Northwestern University,
1956.

MARVIN H. EYLER, Assistant Professor of Physical Education.

A.B., Houghton College, 1942; M.S., University of Illinois, 1948; Ph.D., University
of Illinois, 1956.

HAROLD W. FREEMAN, Instructor of Physical Education.

B.S., Pennsylvania State University, 1942; M.A., New York University, 1948.

CAROL H. FRICK, Instructor of Physical Education

B.S., Brooklyn College, 1954; M.S., University of Michigan, 1956.

DOROTHY HAMBERG, Instructor of Physical Education.

B.S.E., Arkansas State Teachers College, 1946; M.E., University of Arkansas, 1951.

MARY R. HARRINGTON, Instructor of Physical Education.

B.S., College of William and Mary, 1949; M.A., New York University, 1951.

ELLEN E. HARVEY, Associate Professor of Physical Education and Recreation.

B.S., New College, Columbia University, 1935; M.E., Teachers College, Columbia University, 1941; Ed.D., University of Oregon, 1951.

MARTHA J. HAVERSTICK, Assistant Professor of Physical Education.

B.S., Pennsylvania State College, 1943; M.S., University of Wisconsin, 1950.

LOUISE S. HOWARTH, Assistant Professor of Physical Education.

A.B., Breanau College, 1928; M.Ed., University of Minnesota, 1949.

JOSEPHINE W. HUBBELL, Assistant Professor of Health Education.

B.S., William and Mary College, 1947; M.A., State University of Iowa, 1948; Ph.D., New York University, 1956.

JAMES H. HUMPHREY, Professor of Physical Education and Health.

A.B., Denison University, 1933; A.M., Western Reserve University, 1946; Ed.D., Boston University, 1951.

BURRIS F. HUSMAN, Associate Professor of Physical Education.

B.S., University of Illinois, 1941; M.S., 1948; Ed.D., University of Maryland, 1954.

WARREN R. JOHNSON, Professor of Physical Education and Health.

B.A., University of Denver, 1942; M.A., 1947; Ed.D., Boston University, 1950.

JAMES KEHOE, Associate Professor of Physical Education, Director of Intramurals, and Head Track Coach.

B.S., University of Maryland, 1940.

ETHEL KESLER, Instructor of Physical Education.

B.S., Woman's College, University of North Carolina, 1949; M.S., Wellesley College, 1953.

GEORGE F. KRAMER, Instructor of Physical Education.

B.S., University of Maryland, 1953; M.A., University of Maryland, 1956.

WILLIAM E. KROUSE, Assistant Professor of Physical Education and Head Wrestling Coach.

B.S., University of Maryland, 1942; M.Ed., 1949.

RUTH M. LATIMER, Associate and Assistant Educational Administrator of Physical Therapy Curriculum.

B.S., University of Richmond, 1945; Certificate in Physical Therapy, Army Medical Department, 1946; M.S., Medical College of Virginia, 1952.

JACK S. LOWDER, Instructor of Physical Education.

B.S., Wake Forest, 1950; M.E., University of North Carolina, 1955.

DOROTHY G. MADDEN, Assistant Professor of Physical Education.

A.B., Middleburg College, 1936; M.A., Syracuse University, 1937.

BENJAMIN H. MASSEY, Professor of Physical Education.

A.B., Erskine College, 1938; M.S., University of Illinois, 1947; Ph.D., 1950.

DOROTHY R. MOHR, Professor of Physical Education.

B.S., University of Chicago, 1932; A.M., 1933; Ph.D., University of Iowa, 1944.

H. BURTON SHIPLEY, Associate Professor of Physical Education and Head Baseball Coach.

B.S., University of Maryland, 1934.

DORIS TERRY, Instructor of Health Education.

B.S., Western Kentucky State College, 1949; M.S., University of Indiana, 1952

THERON A. TOMPKINS, Associate Professor of Physical Education.

B.S., Ipsilanti College, 1926; M.A., University of Michigan, 1939.

GLADYS E. WADSWORTH, Assistant Professor and Education Administrator of Physical Therapy Curriculum.

B.S., East Stroudsburg State Teacher's College, 1936; M.A., Columbia University, 1942; Certificate in Physical Therapy, Army Medical Department, 1943; Ph.D., University of Maryland, 1955.

ALBERT A. WOODS, Associate Professor of Physical Education.

B.S., University of Maryland, 1933; M.Ed., 1949.

Part-Time Lecturers

W. W. COBEY, Associate Professor, Director of Athletics.

A.B., University of Maryland, 1930.

H. A. MILLIKAN, Associate Professor and Head Basketball Coach.

B.S., Oklahoma A. & M. College, 1943.

THOMAS A. MONT, Instructor and Head Football Coach.

B.S., University of Maryland, 1947.

ROBERT R. WARD, Instructor and Assistant Football Coach.

B.S., University of Maryland, 1952.

ALFRED J. WYRE, Head Trainer.

COLLEGE OF PHYSICAL EDUCATION, RECREATION AND HEALTH

LESTER M. FRALEY, Ph.D., *Dean*

This College provides professional preparation leading to the Bachelor's degree in the following general areas: physical education, recreation, health and safety education, and physical therapy. Moreover, in conjunction with the Graduate School and the College of Education, graduate programs leading to both Master's and Doctor's degrees are available in physical education, recreation and health. A research laboratory is maintained for faculty members and selected graduate students who are interested in investigating the effects of exercise and various physical education activities upon the body.

A two-year required program of physical education is provided by this College for all men and women of the University, and a two-semester health course is provided for all women.

An extensive intramural sports program for both men and women students also is conducted.

In addition to its various on-campus offerings, this College regularly conducts physical education, recreation and health education courses and workshops for teachers in various parts of the State of Maryland.

SPECIAL FACILITIES AND ACTIVITIES

The close proximity to Baltimore and Washington, and particularly to the Federal agencies and headquarters of national professional organizations in the capital city, affords unusual contact for those who wish to study in the fields which the College embraces. The evolving county-wide programs in these fields in Maryland and adjoining states offer unusual opportunity for practical experience in many types of situations. The great variety of inter-collegiate athletic competition in the University offers maximum opportunity for practical advanced athletic participation for those interested in this type of work.

STUDENT ORGANIZATIONS

Women's Professional Club

All women students enrolled in the College are eligible for membership in this organization. It conducts various professional meetings, brings in speakers and promotes various co-recreational activities. It has sponsored trips to District and National conventions of the American Association for Health, Physical Education, and Recreation, and is chartered as a student major club of that organization.

Phi Alpha Epsilon

Honorary Society of the College of Physical Education, Recreation and Health.

The purpose of this organization is to recognize academic achievement and to promote professional growth by sponsoring activities in the fields of physical education, recreation, health, physical therapy, and related areas.

Students shall qualify for membership at such time as they shall have attained Junior standing in Physical Education, Health, Recreation, or Physical Therapy, and have a minimum overall average of 2.7 and a minimum professional average of 3.1.

The organization is open to both men and women.

Women's Recreation Association

All women students of the University are members of the Women's Recreation Association, an affiliate of the Athletic Federation of College Women. Under the leadership of its elected student officers and representatives and appointed sports managers, the WRA sponsors a full program of intramural, extramural, and interest group activities. These activities seek to develop new interests and skills for leisure-time enjoyment, provide opportunities for continuing both old and new interests, and provide a democratic atmosphere for educational leadership experiences. Included are free and tournament play in archery, badminton, basketball, bowling, fencing, field hockey, golf, softball, swimming, table tennis, tennis, and volleyball; social events such as cookouts, square dancing, roller skating parties, etc.; and co-recreational activities in bowling, badminton, volleyball, etc. Intramural tournaments are organized through the dormitory, sorority, and "day dodger" groups of the University. Sports Days and Play Days with other colleges and universities enable the more skilled students to participate with others of similar abilities. Opportunities also are provided for officiating experiences and for the earning of official WNORC ratings in basketball, field hockey, swimming, tennis and volleyball.

Various special groups and clubs interested in recreation exist on campus outside the jurisdiction of the Women's Recreation Association and offer rich opportunities for the development of other recreational interests. Some of these are the Terrapin Trail Club, Ballroom Dance Club, Riding Club, Chess Club, Gymkana Troupe, Sailing Club, Ski Club, and musical and dramatic groups.

Aqualiners

This synchronized swimming club is open to all men and women registered in the University. Through weekly meetings the group concentrates on additional stroke perfection, individual and group stunts, diving, and experimentation with various types of accompaniment and choreographic techniques. An original water show is presented each spring and several demonstrations are given each year.

Modern Dance Groups

Men and women interested in modern dance concentrate on dance techniques and individual and group compositions. Members present a spring concert and perform in demonstrations on and off campus. Advanced and beginning groups meet weekly. No experience necessary for beginning club.

Sigma Tau Epsilon

This society, founded in 1940, selects those girls who have attained an overall 2.5 average and demonstrated outstanding leadership, service and sportsmanlike qualities in the organization and activities of the Women's Recreation Association and its affiliated groups.

Intramurals for Men

The Intramural Department offers an extensive opportunity for all men to participate in a recreational program of either individual or team sports. A variety of activities are available to fill the student's leisure time and develop skills which may be carried over into later life. Also, many desirable attributes, such as fair play, leadership, team work and sportsmanship, are encouraged and developed by the student participating in the program.

Leagues and tournaments are conducted in the following sports: touch football, horseshoe pitching, tennis, cross country, track and field, basketball, table tennis, badminton, boxing, wrestling, bowling, volleyball, swimming, foul shooting and softball.

Management and officiating in intramural sports are conducted by students majoring in physical education under the supervision of the Director of Intramurals and under policies and regulations established by the Intramural Council.



Golf Class

ADMISSIONS

All students desiring to enroll in the College of Physical Education, Recreation, and Health must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students, more emphasis will be placed on good marks and other indications of possible success in college, rather than upon a fixed pattern of subject matter. In general, 4 units of English and 1 unit each of Social and Natural Sciences are required. One unit each of Algebra and Plane Geometry is desirable. While Foreign Language is desirable for certain programs, no Foreign Language is required for entrance. Fine Arts, Trade and Vocational subjects are acceptable as electives. It is especially desirable that the student have at least one unit each in Biological Science and in Physical Science; and in addition, health and safety education, and participation in school programs of physical education and athletics are desirable. Any experience in music, drama, camping, playground and recreational activities, and group leadership also will be helpful. Students whose high school records are consistently low should not enroll in any of the teacher education curricula of this College.

Students desiring to enroll in the professional curriculum must be free from handicapping defects. Physical examinations can be required periodically to determine physical status. Students developing physical defects after enrolling in the College may be recommended for transfer to another curriculum. Competence in motor activities is essential for success in the Physical Education program.

For a more detailed statement of admission, write the Director of University Relations for a copy of the "General Information Issue" of the Catalog.

COSTS

Actual annual costs of attending the University include: \$165.00 fixed charges; \$77.00 special fees; \$400.00 board; \$140.00 to \$170.00 lodging for Maryland residents, or \$180.00 to \$220.00 for residents of other States and Countries; and laboratory fees which vary with the laboratory courses pursued. A matriculation fee of \$10.00 is charged all new students. A charge of \$250.00 is assessed to all students who are non-residents of the State of Maryland.

For students enrolled in the Physical Therapy Curriculum the annual costs for the junior and the senior year taken on the Baltimore campus include: \$300.00 fixed charges; \$200.00 lodging for women students. There are no housing accommodations on the Baltimore campus for male physical therapy students.

For a more detailed statement of these costs, write to the Director of University Relations for the Catalog of General Information.

MILITARY INSTRUCTION

All male students, unless specifically exempt under University rules, are required to take Basic Air Force R.O.T.C. training for a period of two years. The successful completion of these courses is a prerequisite for graduation, but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of military training will be

required to complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may carry Advanced Air Force R.O.T.C. courses, during their junior and senior years, which lead to a regular or reserve commission in the United States Air Force.

GENERAL INFORMATION

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, sororities, societies and special clubs, the University Band, student publications, University Post Office and Supply Store, write to the Director of University Relations for the General Information Issue of the Catalog.

JUNIOR STATUS

For junior standing in this College, the requirements shall be, in addition to required military and physical education for men, and required physical education and health for women: (1) fifty-six (56) semester hours of academic credit, the whole program to be completed with an average grade of "C" (2.0); and (2) completion of all required physical education and health courses with no grade below "C." Students who have not attained this status must repeat courses with low grades and may take only those advanced courses for which written permission is given by the Dean. The student must obtain a grade of "C" or above in all professional courses during the junior and senior years.

DEGREES

The degree of Bachelor of Science is conferred upon students who have met the conditions of their curricula as herein prescribed by the College of Physical Education, Recreation, and Health, and have completed 120 academic hours, not including military science and/or physical activities. Candidates enrolled in the College of Education with a major in Physical Education or Health Education receive a Bachelor of Science degree upon fulfillment of the requirements as prescribed by that College.

Certain curricula in the College of Physical Education, Recreation and Health, such as Recreational Leadership and Physical Therapy, are not planned to meet state certification requirements.

Each candidate for a degree must file in the Office of the Registrar eight weeks prior to the date of graduation, a formal application for a degree.

Requirements for Degree in Physical Education

Requirements for the Bachelor of Science degree in Physical Education in the College of Physical Education, Recreation, and Health are as follows:

<i>Men</i>	<i>Sem. Cr.</i>
Professional physical education courses (P. E. 30, 50, 59, 61, 63, 65, 67, 100, 101, 103, 113, 115, 123, or 125, 160, 180, 190).....	33
Foundation science courses as prescribed (Zool. 1, 14, 15; Physical Science 3-4 hours)	15-16
Education courses as prescribed (including C. I. O.).....	20
General requirements (Eng. 1, 2, 3, 4; Hist. 5, 6; Soc. 1; Econ. 31, 37, or Phil. 1; G. & P. 1).....	24
Specially prescribed requirements (Sp. 7).....	2
University requirements in Basic Air Force R. O. T. C.....	12
Health courses as prescribed (Hea. 40, 50).....	4
Electives (Must include P. E. 120; Hea. 120, or Rec. 170)	25
Total	136

<i>Women</i>	<i>Sem. Cr.</i>
Professional physical education courses (P. E. 30, 40, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 78, 100, 114, 116, 124, 126, 160, 180, 190)....	42
Foundation science courses as prescribed (Zool. 1, 14, 15; Physical Science 3-4 hours)	15-16
Education courses as prescribed (including C. I. O.).....	20
General requirements (Eng. 1, 2, 3, 4; Hist. 5, 6; Soc. 1, Econ. 31, 37, or Phil. 1; G. & P. 1).....	24
Specially prescribed requirements (Sp. 7).....	2
Health courses as prescribed (Hea. 40, 50).....	4
Electives (Must include P. E. 120, Hea. 120, or Rec. 170).....	20
Total	128

Requirements for Degree in Dance

Requirements for the Bachelor of Science degree in Physical Education, Recreation and Health, major in Dance are as follows:

College Dance courses (P. E. 50, 52, 54, 56, 58, 60, 70, 80, 110, 126, 182, 184, 192)	24
Prescribed courses in related areas (P. E. 30, 40, 62, 100, 114, 190; Music 1, 7; Sp. 8, 14, 15; Phil. 153; Pr. Arts 1)	37

Prescribed Health Courses (Hea. 40, 50).....	4
General Requirements (Eng. 1, 2, 3, 4 or 5, 6; Hist. 5, 6; Soc. 1, Econ. 31, 37 or Phil. 1; G. & P. 1)	24
Foundation Science Courses (Zool. 1, 14, 15).....	12
Education courses as prescribed (including C. I. O.).....	20
Electives	11-21
Total	132-142

NOTE: P. E. 90 Workshop 1-6 credits required of Dance Majors.

Requirements for Degree in Recreation

Requirements for the Bachelor of Science degree in Recreation in the College of Physical Education, Recreation, and Health are as follows:

Men

College recreation courses (Rec. 10, 30, 40, 100, 110, 120, 140, 180, 190)	23
Prescribed courses in related areas (H. D. Ed. 100, 101; Crafts 2; Music 7; P.E. 30, 50, 59, (61, 63, 65, 67, any two), 101 or 103, 113, 123 or 125; Practical Arts 1; Psych. 1; Soc. 2, 118; Sp. 1, 4, 10, 113)	39-41
Prescribed health courses (Hea. 50).....	1
Prescribed foundation science courses (Zool. 1, 16).....	8
General requirements (Eng. 1, 2, 3, 4; Hist. 5, 6; Soc. 1; Econ. 31, 37, or Phil. 1; G. & P. 1)	24
Basic academic sequence	9
University requirements in Basic Air Force R. O. T. C.	12
Electives	20
Total	136-138

Women

College recreation courses (Rec. 10, 30, 40, 100, 110, 120, 140, 180, 190)	23
Prescribed courses in related areas (H. D. Ed. 100, 101; Crafts 2; Music 7; P.E. 30, 40, 50, 56, 58 (62, 64, 66, 68, any two), 72, 74, 76 or 78, 114, 116, 124 or 126; Practical Arts 1; Psych. 1; Soc. 2, 118; Sp. 1, 4, 10, 113).....	45-46
Prescribed health courses (Hea. 40, 50).....	4
Prescribed foundation science courses (Zool. 1, 16).....	8
General requirements (Eng. 1, 2, 3, 4; Hist. 5, 6; Soc. 1; Econ. 31, 37; or Phil. 1; G. & P. 1)	24
Basic academic sequence	9
Electives	17
Total	130-131

Requirements for Degree in Health Education

Requirements for the Bachelor of Science degree in Health Education in the College of Physical Education, Recreation, and Health are as follows:

<i>Men</i>	<i>Sem. Cr.</i>
Foundation science courses (Zool. 1, 14, 15; Bact. 1, 105; Chem. 11, 13)	26
General requirements (Eng. 1, 2, 3, 4; Hist. 5, 6; Soc. 1; Econ. 31, 37, or Phil. 1; G. & P. 1)	24
Other specified requirements (Sp. 7; Psych. 1, 5; Nut. 10).....	11
Professional health education courses (Hea. 10, 30, 40, 50, 70, 110, 120, 140, 150; Ed. 150, or Hea. 180; Ed. 110, or Hea. 190).....	27-29
Education courses (H. D. Ed. 100, 101; Ed. 145, 148).....	17
University requirements in Basic Air Force R.O.T.C. (A. S. 1, 2, 3, 4)	12
University requirements in physical activity (P. E. 1, 3, 5, 7).....	4
Electives	15
Total	136-138

Women

Foundation science courses (Zool. 1, 14, 15; Bact. 1, 105; Chem. 11, 13)	26
General requirements (Eng. 1, 2, 3, 4; Hist. 5, 6; Soc. 1; Econ. 31, 37, or Phil. 1; G. & P. 1)	24
Other specified requirements (Sp. 7; Psych. 1, 5; Nut. 10).....	11
Professional health education courses (Hea. 10, 30, 40, 50, 70, 110, 120, 140, 150; Ed. 150, or Hea. 180; Ed. 110, or Hea. 190).....	27-29
Education courses (H. D. Ed. 100, 101; Ed. 145, 148).....	17
University requirements in physical activity (P. E. 2, 4, 6, 8).....	4
Electives	19
Total	128-130

Requirements for Degree in Physical Therapy

Requirements for the Bachelor of Science degree in Physical Therapy in the College of Physical Education, Recreation and Health are as follows:

<i>Freshman and Sophomore program—College Park Campus</i>	<i>Semester Credit</i>
Biological Science Courses (Zool. 1, 5, 20).....	12
Physical Science Courses (Chem. 1, 3; Physics 10, 11).....	16
Mathematics Courses (Math. 10, 11).....	6
Social Science Courses (Soc. 1 or Phil. 1 or Econ. 31 or Econ. 37; G. & P. 1; Psych. 1).....	9
English Courses (Eng. 1, 2, 3, 4).....	12
Physical Education Courses	4
Speech Courses (Speech 1, 2).....	4
Military R.O.T.C. Courses (A. S. 1, 2, 3, 4) Required of men or	12

Electives (For women)

Professional Courses (P. T. 10, 11, 20, 21)..... 2

Total 77

Junior and Senior program—Baltimore campus

Biological Science Courses (Anat. 103; Physio. 101)..... 12½

Medical Science Courses (Path. 105)..... 2

Social Science Courses (Hist. 5, 6; Psych. 5, 161)..... 10

Education Courses (Ed. 90)..... 3

Professional Courses (P. T. 102, 104, 106, 107, 108, 110, 151, 152,
153, 154, 155, 156, 157, 158, 160)..... 38½

Total 66

GRAND TOTAL 143

PROFESSIONAL CURRICULA

Physical Education

This curriculum prepares students (1) for teaching physical education in the secondary schools, (2) for coaching, and (3) for leadership in youth and adult groups which offer a program of physical activity. The first two years of this curriculum are considered to be an orientation period in which the student has an opportunity to gain an adequate background in general education as well as in those scientific areas closely related to this field of specialization. In addition, there is considerable emphasis placed upon the development of skills in a wide range of motor activities. This basic training makes it possible for the student to select related areas, especially in the fields of biology, health education, and recreation as fields of secondary interest. These materially increase the vocational opportunities which are available to a graduate in physical education.

Physical Education Curriculum

MEN

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government.....	3	1
Zool. 1—General Zoology		4
Sp. 7—Public Speaking	2	.....
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	.....
P. E. 50—Rhythmic Analysis and Movement.....	1	.....
P. E. 59—Skills in Folk, Square and Social Dance.....	.....	1
P. E. 61, 63—Sport Skills and Gymnastics	2	2
A. S. 1, 2,—Basic Air Force R. O. T. C.	3	3
Electives (See Note 3).....	0	3
Total.....	16	16

NOTE 1: Students classified in Group 3 on Mathematics Entrance Test must take Math. O.

NOTE 2: PE 71 may be required, depending upon swimming ability of student.

NOTE 3. Students must elect one course from the following group: Econ. 31, Econ. 37,
Phil. 1, Soc. 1.

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Zool. 14, 15—Human Anatomy and Physiology.....	4	4
Physical Science Group Requirement (Mathematics, Physics or Chemistry)	3-4	.....
Hea. 40—Personal and Community Health.....	.....	3
P. E. 65, 67—Sport Skills and Gymnastics.....	2	2
A. S. 3, 4—Basic Air Force R. O. T. C.	3	3
Total.....	18-19	18

<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development I, II.....	3	3
P. E. 77—Methods of Teaching Aquatics.....	.....	2
P. E. 100—Kinesiology	4	.....
P. E. 101, 103—Organization and Officiating in Intramurals.....	1	1
P. E. 113, 115—Methods and Materials for Secondary Schools...	3	1
P. E. 123, 125—Coaching Athletics.....	3	.....
P. E. 180—Measurement in Physical Education and Health.....	.....	3
Hea. 50—First Aid and Safety.....	.....	1
Electives (See Note 1).....	5	8
Total.....	19	19

<i>Senior Year</i>		
P. E. 140—Curriculum, Instruction and Observation.....	.....	3
P. E. 160—Theory of Exercise	3	.....
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health.....	.....	3
Ed. 145—Principles of High School Teaching.....	.....	3
Ed. 148—Student Teaching in the Sec. Sch. (See Note 2).....	.....	8
Electives (See Note 1).....	15	.....
Total.....	18	17

NOTE 1: Every student in Junior or Senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

NOTE 2: When Ed. 148 is scheduled, Ed. 145, P. E. 140, and P. E. 190 must be scheduled concurrently. This may be done either semester.

WOMEN

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government.....	3	.....
Zool. 1—General Zoology.....	.....	4
Sp. 7—Public Speaking	2	.....
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	.....
P. E. 40—Basic Body Controls	1	.....
P. E. 50—Rhythmic Analysis and Movement	2	.....
P. E. 52—Dance Techniques .....	.....	1
P. E. 56—Skills and Methods in Folk and Square Dance.....	.....	1
P. E. 62, 64—Elementary Techniques of Sports and Gymnastics	2	2
Electives (See Note 3).....	.....	5
Total.....	15	16

NOTE 1: P. E. 72 may be required, depending upon swimming ability of student.

NOTE 2: Students classified in Group 3 on Mathematics Entrance Test must take Math. O.

NOTE 3: Students must elect one of the following: Econ. 31, Econ. 37, Phil. 1, or Soc. 1.

PHYSICAL EDUCATION, RECREATION AND HEALTH

<i>Sophomore Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Zool. 14, 15—Human Anatomy and Physiology.....	4	4
Physical Science Group Requirement (Mathematics, Physics or Chemistry)	3-4	.....
Hea. 40—Personal and Community Health.....	.....	3
P. E. 54—Dance Techniques	1	.....
P. E. 58—Skills and Methods in Social Dance.....	1	.....
P. E. 60—Dance Composition .....	.....	2
P. E. 66, 68—Techniques of Sports.....	2	2
Total.....	17-18	17

NOTE: P. E. 74 and/or 76 may be required, depending upon swimming ability of student.

Junior Year

H. D. 100, 101—Principles of Human Development I, II.....	3	3
P. E. 78—Methods of Teaching Aquatics.....	.....	2
P. E. 100—Kinesiology	4	.....
P. E. 114, 116—Methods in Physical Education for Secondary Schools	3	1
P. E. 124, 126—Practicum in Leadership.....	2	2
P. E. 180—Measurement in Physical Education and Health.....	3	.....
Hea. 50—First Aid and Safety .....	.....	1
Electives (See note 1).....	.....	7
Total.....	15	16

NOTE: Students must hold two official ratings to be eligible for student teaching.

Senior Year

P. E. 140—Curriculum, Instruction and Observation.....	.....	3
P. E. 160—Theory of Exercise.....	3	.....
P. E. 190—Administration and Supervision of Physical Education, Recreation and Health.....	.....	3
Ed. 145—Principles of High School Teaching.....	.....	3
Ed. 148—Student Teaching in the Sec. Sch. (See Note 2).....	.....	8
Electives (See Note 1)	12	.....
Total.....	15	17

NOTE 1: Every student in Junior or Senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

NOTE 2: When Ed. 148 is taken, Ed. 145, P. E. 140 and P. E. 190 must be scheduled concurrently. This may be done either semester.

Minor in Physical Education

20 semester hours in Physical Education and 4 semester hours in cognate areas.

Required Courses:

Men—PE 30; PE 61, 63, 65, 67, (2-6*) PE 113; PE 101 or 103.

Women—PE 30; PE 62, 64, 66, 68 (2-6*); PE 114, 116; PE 124, 126.

Elective Courses:

Men and Women—PE 78, 100; PE 123; PE 125; PE 140; PE 160; PE 180; PE 190; Hea. 110; Hea. 120; Rec. 30; Rec. 40; Rec. 100; Rec. 150; Rec. 170.

If planning to teach, the cognate courses for men should be Hea. 40 and Hea. 50; for women, Hea. 50 and Hea. 120. Men should include PE 123 or PE 125 if planning to coach.

NOTE: To be certified to teach in Maryland, 30 semester hours are required in this area, including the following or equivalent: Zool. 14, 15; Hea. 50; PE 100, 140; Ed. 145 and Ed. 148 including at least 25 hours of student teaching.

DANCE

With the increasing recognition of the importance and scope of dance in education program, the need for teachers adequately trained in dance far exceeds the number available. The professional curriculum in dance is constructed to meet the steadily rising demand for personnel qualified to teach dance in college, secondary, elementary schools, in camps, recreational agencies and in preparation for dance therapy.

The course of study provides general background knowledge in culture and foundation sciences as well as particularization in dance skills, theory and philosophy. Courses in music theory, acting and stagecraft answer additional needs for dance production planning. Students are urged to enrich their background in an interchange in creative arts in other departments of the University, and opportunity is given to serve as assistants in the non-professional program.

The majors in dance have performance opportunities in the Dance Group which presents one major concert each year, and the Demonstration Group which performs on and off campus.

Additional dance experience is available in nearby Washington for the student who may wish to visit professional studios. Many opportunities are provided for students to meet outstanding artists in the field and to take part in symposia and workshops both on campus and in Washington. The proximity of Washington and the availability of the embassies affords many unique cultural experiences.

Dance Curriculum

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government.....	3	.....
Zool. 1—General Zoology .....	.....	4
Sp. 8—Acting	3	.....
P. E. 30—Introduction to Physical Education, Recreation and Health	2	.....
P. E. 40—Basic Body Controls.....	1	.....
P. E. 50—Rhythmic Analysis and Movement.....	1-2	.....
P. E. 52—Dance Techniques .....	.....	1
P. E. 56, 58—Folk, Square, Social Dance.....	1	1
P. E. 62—Elementary Techniques of Sports.....	2	.....
Hea. 40—Personal and Community Health.....	.....	3
Electives (See Note 2).....	.....	3-6
Total	16-17	15-18

NOTE 1: P. E. 72 may be required, depending on the swimming ability of the student.

NOTE 2: Students must elect one of the following: Econ. 31, Econ. 37, Phil. 1, Soc. 1.

Sophomore Year

Eng. 3, 4—Composition and World Literature or.....	3	3
Eng. 5, 6—Composition and English Literature .....	.....	.....
Hist. 5, 6—History of American Civilization.....	3	3
Zool. 14, 15—Human Anatomy and Physiology.....	4	4
Pr. Arts 1—Design.....	3	....
P. E. 54—Dance Techniques	1	....
P. E. 60—Dance Composition .....	....	2
Hea. 50—First Aid and Safety.....	....	1
Music 1, 7—Introduction to Music, & Fundamentals.....	3	3
Electives (See Note 1).....	....	0-3
Total	18	15-18

Junior Year

P. E. 70, 80—Intermediate and Advanced Dance.....	2	2
P. E. 100—Kinesiology	4	....
P. E. 114—Methods in Physical Education for Secondary Schools	3	....
P. E. 126—Practicum in Leadership.....	....	2
P. E. 182—History of Dance.....	3	....
P. E. 192—Percussion Accompaniment & Music for Dance.....	....	2
Sp. 14, 15—Stagecraft	3	3
Philos. 153—Philosophy of Art.....	....	3
H. D. 100, 101—Principles of Human Development I, II.....	3	3
Electives (See Note 1).....	....	0-3
Total	18	15-18

<i>Senior Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
P.E. 110—Dance Production	3	....
P.E. 140—Curriculum, Instruction and Observation.....	....	3
P.E. 184—Philosophy & Theory of Dance.....	3	....
P.E. 190—Administration and Supervision of Physical Education, Recreation and Health .....	....	3
Ed. 145—Principles of High School Teaching.....	....	3
Ed. 148—Student Teaching in the Secondary Schools (See Note 2) .....	....	8
Electives (See Note 1).....	12	....
Total	18	17

NOTE 1: P.E. 90—Workshop 1-6 credits required of Dance majors.

NOTE 2: When Ed. 148 is taken Ed. 145, P.E. 140, P.E. 190 must be scheduled concurrently. This may be done either semester.

Minor in Dance

A total of 20 credit hours is required, of which 15-17 hours must be in Dance, and 3-5 hours in a cognate area.

Required Courses

P.E. 56, 58, or 55; 50, 52, 54, 60, 70, 80; 110 or 55; 182 or 192.

Recommended Elective Courses

Sp. 8, 14, 15, 16, 113; Music 1, 7, 8, 16, 121; Pr. Arts 1, 2; Art 2, 9, 11, 100, 101; Eng. 157; P.E. 90, 100; C. Ed. 115, 116, 117; Rec. 30, 100, 120.

Suggested Minors For the Dance Major

Music, Physical Education, Recreation, Split Sociology-Psychology, Speech, and Split Recreation-Sociology.

Special Preparation for Elementary School Physical Education

Men and Women physical education major students who desire to prepare for positions in Elementary School Physical Education should elect the following courses designed for SPECIAL PREPARATION FOR THE ELEMENTARY SCHOOL LEVEL: P. E. 55, Elementary School Rhythmic Activities (2 credits); P. E. 120, Physical Education for the Elementary School (3 credits); P. E. 195, Organization and Administration of Elementary School Physical Education (3 credits). These courses will be offered each semester.

Recreation

The increased amount of leisure time existent in our society because of the rapid development of modern civilization, and the imperative need for guidance in the wise use of that leisure time has made us cognizant of the need for trained recreation leaders.

This curriculum therefore is designed to meet the needs of students who wish to qualify for the many positions in the field of recreation, and the needs of those students who desire a background of culture and skills which will enable them to render distinct contributions to community life. The College draws upon various other departments and colleges within the University for courses to balance and enrich its offerings for its recreation major students.

Majors in recreation also have opportunity for observation and practical experiences in local recreation and agency programs, in those programs of metropolitan Washington and Baltimore, and in various programs of the Armed Forces.

Recreation Curriculum

MEN

<i>Freshman Year</i>	~Semester~	
	I	II
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life.....	3	.....
G. & P. 1—American Government.....	.....	3
Sp. 1—Public Speaking	2	.....
Sp. 4—Voice and Diction.....	.....	3
Zool. 1—General Zoology .....	.....	4
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	.....
P. E. 50—Rhythmic Analysis and Movement.....	1	.....
P. E. 59—Skills in Folk, Square, and Social Dances.....	.....	1
P. E. 61, 63, 65, or 67—Sport Skills and Gymnastics (see note below)	2	2
Rec. 10—Recreation Orientation	0	0
A. S. 1, 2—Basic Air Force R. O. T. C.....	3	3
Total	16	19

Sophomore Year

Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Sp. 10—Group Discussion.....	.....	2
Zool. 16—Human Physiology (or Bot. 1—General Botany).....	4	.....
Hea. 50—First Aid and Safety.....	.....	1
Pr. Arts 1—Design	3	.....
Psych. 1—Introduction to Psychology.....	.....	3
Rec. 30—History and Introduction to Recreation.....	2	.....
Rec. 40—Camp Counseling (or Rec. 150—Camp Management if experienced) .....	.....	2-3
A. S. 3, 4—Basic Air Force R. O. T. C.....	3	3
Electives	0	1-2
Total	18	18-20

<i>Junior Year</i>	Semester	
	I	II
*Basic Academic Sequence (9 hours).....	3-6	3-6
Cr. 2—Simple Crafts.....	2	.....
Mus. 7—Fundamentals of Music.....	2	.....
P. E. 113, 123 or 125—Methods and Materials for Secondary Schools or Coaching Athletics (See Note 1).....	3	or 3
Rec. 100—Co-recreational Games and Programs.....	2	.....
Rec. 110—Nature Lore.....	.....	2
Rec. 120—Program Planning.....	3	.....
Soc. 2—Principles of Sociology.....	.....	3
Sp. 113—Play Production .....	.....	3
Electives	0-2	2
Total	17-18	17-19

<i>Senior Year</i>		
H. D. 100, 101—Principles of Human Development I, II.....	3	3
P. E. 101 or 103—Organization and Officiating in Intramurals	2	or 2
Rec. 140—Observation and Field Work in Recreation.....	.....	5
Rec. 180—Leadership Techniques and Practices.....	3	.....
Rec. 190—Organization and Administration of Recreation.....	.....	3
Soc. 118—Community Organization .....	.....	3
Electives	8	4-6
Total	16	16

WOMEN

<i>Freshman Year</i>	Semester	
	I	II
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life.....	3	.....
G. & P. 1—American Government.....	3	.....
Sp. 1—Public Speaking	2	.....
Sp. 4—Voice and Diction.....	.....	3
Zool. 1—General Zoology .....	.....	4
Hea. 40—Personal and Community Health.....	.....	3
P. E. 30—Introduction to Physical Education, Recreation, and Health	2	.....
P. E. 40—Basic Body Controls.....	1	.....
P. E. 50—Rhythmic Analysis and Movement.....	1	.....
P. E. 52—Modern Dance .....	.....	1
P. E. 56—Skills and Methods in Folk and Square Dance.....	.....	1
P. E. 62, 64, 66 or 68—Elementary Techniques of Sports and Gymnastics (See Note 1).....	2	or 2
Rec. 10—Recreation Orientation	0	0
Total	15-17	15-17

*The basic sequence encourages a student to pursue his minor in an academic field, preferably sociology-psychology.

(NOTE 1: Choice of activities depends upon student's background and interest.)

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Sp. 10—Group Discussion.....	.....	2
Hea. 50—First Aid and Safety.....	.....	1
P. E. 62, 64, 66 or 68—Elementary Techniques of Sports and Gymnastics (see note)	2	or 2
P. E. 72, 74, 76 or 78—Elementary, Intermediate and Advanced Swimming, Diving and Life Saving; Methods of Teaching Aquatics (see note)	1-2	or 1-2
Pr. Arts 1—Design.....	3	.....
Psych. 1—Introduction to Psychology.....	.....	3
Rec. 30—History and Introduction to Recreation.....	2	.....
Rec. 40—Camp Counselling (or Rec. 150—Camp Management if experienced) .....	.....	2-3
Zool. 16—Human Physiology (or Bot. 1—General Botany).....	4	.....
Total	16-18	16-18

NOTE: Choice of activities depends upon student's background and interest.

Junior Year

*Basic Academic Sequence (9 hours).....	3-6	3-6
Cr. 2—Simple Crafts.....	2	.....
Mus. 7—Fundamentals of Music.....	2	.....
P. E. 114, 116, 124 or 126—Methods in Physical Education for Secondary School, Practicum in Leadership (see note).....	2-3	or 2-3
Rec. 100—Co-recreational Games and Programs.....	2	.....
Rec. 110—Nature Lore .....	.....	2
Rec. 120—Program Planning	3	.....
Soc. 2—Principles of Sociology.....	3	.....
Sp. 113—Play Production .....	.....	3
Electives .....	.....	3
Total	17-18	13-17

Senior Year

H. D. Ed. 100, 101—Principles of Human Development I, II.....	3	3
Rec. 130—Leadership Techniques and Practices.....	3	.....
Rec. 140—Observation and Field Work in Recreation.....	.....	5
Rec. 190—Organization and Administration of Recreation.....	.....	3
Soc. 118—Community Organization .....	.....	3
Electives	9	2
Total	15	16

NOTE: Choice of activities depends upon student's background and interest.

Minor in Recreation

18 semester hours in Recreation and 6 semester hours in cognate areas.

*The basic academic sequence encourages a student to pursue his minor in an academic field, preferably sociology-psychology.

Required Courses:

10 hours in Rec. 30, 40, 120, 180, or 190; Rec. 100; Soc. 118.

6 hours of work in areas of the recreational skills—nature, arts and crafts, speech and dramatics—but NOT in the area of the student's major.

2 hours of work in the areas of swimming, sports and dance skills; (men)—P.E. 50, 59, 61, 63, 65, 67, 113, 123, 125; (women)—P.E. 40, 50, 52, 54, 56, 58, 62, 64, 66, 68, 72, 74, 76, 78, 114, 116, 124, 126.

OR other courses approved by the student's adviser and the various departments involved, depending upon the student's interest and background.

Elective Courses:

6 hours in cognate areas of sociology, psychology, etc., on approval of the student's adviser.

Recommended Elective Courses:

Art 100, 101; Astron. 1, 2; C. Ed. 112, 116, 117; Cr. 3, 5, 6, 20, 21, 30, 31, 40, 41, 198; Ed. 52, 147; Ind. Ed. 2, 9; Journ. 10; Music 1, 4, 5, 10, 50; P. E. 180; Pr. Arts 38 or 39; Psych. 121, 125, 126; R. Ed. 114, 150; Soc. 13, 62, 113, 131, 153; Sp. 101, 129, 130.

Health Education

This curriculum is designed to prepare the student to give leadership in the development of the school health education program including (1) health services (2) healthful environment, and (3) health teaching. Graduates in this area have placement opportunities in schools, colleges, and in public and private health agencies. The minor is planned to be particularly suitable for students who are majoring in physical education, education, home economics, and nursery school-kindergarten education.

Health Education Curriculum

MEN

Freshman Year	Semester	
	I	II
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life.....	3	.....
G. & P. 1—American Government.....	.....	3
Zool. 1—General Zoology .....	.....	4
Sp. 7—Public Speaking	2	.....
Hea. 10—Orientation to Health Education.....	.....	1
Hea. 30—Introduction to Physical Education, Rec., & Health....	2	.....
P. E. 1—Orientation to Physical Education.....	1	.....
P. E. 3—Developmental and Combative Sports.....	.....	1
Chem. 11, 13—General Chemistry.....	3	3
A. S. 1, 2—Basic Air Force R. O. T. C.....	3	3
Total	17	18

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Zool. 14, 15—Human Anatomy and Physiology.....	4	4
Hea. 40—Personal and Community Health.....	3	.....
Hea. 50—First Aid and Safety.....	.....	1
Hea. 70—Safety Education .....	.....	3
P. E. 5—Team and Individual Sports.....	1	.....
P. E. 7—Recreational Activities.....	.....	1
A. S. 3, 4—Basic Air Force R. O. T. C.	3	3
Electives	2	.....
Total	19	18

<i>Junior Year</i>		
Bact. 1—General Bacteriology	4	.....
Bact. 105—Epidemiology and Public Health.....	.....	4
Nut. 10—Elements of Nutrition.....	.....	3
Ed. 150—Educational Measurement or		
Hea. 180—Measurement in Physical Education and Health....	2-3	.....
Hea. 110—Introduction to School & Community Health Services	2	.....
Hea. 120—Methods & Materials of School Health Instruction....	.....	3
H. D. Ed. 100, 101—Principles of Human Development I, II....	3	3
Psych. 1—Introduction to Psychology.....	3	.....
Psych. 5—Mental Hygiene .....	.....	3
Electives	3	2
Total	17-18	18

<i>Senior Year</i>		
Hea. 140—Curriculum, Instruction & Observation.....	3	.....
Hea. 150—Health Problems of the School Child.....	.....	3
Ed. 110—The Teacher and School Administration or		
Hea. 190—Administration and Supervision of School Health		
Education	2-3	.....
Ed. 145—Principles of High School Teaching.....	3	.....
Ed. 148—Student Teaching in the Secondary Schools.....	8	.....
Electives .....	.....	14
Total	16-17	17
NOTE: When Ed. 148 is taken, Ed. 145, P.E. 140 and Hea. 190 must be scheduled concurrently. This may be done either semester.		

WOMEN

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life.....	3	.....
G. & P. 1—American Government.....	.....	3
Zool. 1—General Zoology .....	.....	4
Sp. 7—Public Speaking	2	.....
Hea. 10—Orientation to Health Education.....	.....	1
Hea. 30—Introduction to Physical Education, Rec., & Health....	2	.....
P. E. 2, 4—Basic Skills of Sports and Rhythms.....	1	1
Chem. 11, 13—General Chemistry.....	3	3
Electives	3	3
Total	17	18

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
Zool. 14, 15—Human Anatomy and Physiology.....	4	4
Hea. 40—Personal and Community Health	3	.....
Hea. 50—First Aid and Safety.....	.....	1
Hea. 70—Safety Education .....	.....	3
P. E. 6, 8—Selected Sports and Dance.....	1	1
Electives	3	3
Total	17	18

<i>Junior Year</i>		
Bact. 1—General Bacteriology	4	.....
Bact. 105—Epidemiology and Public Health.....	.....	4
Nut. 10—Elements of Nutrition.....	.....	3
Ed. 150—Educational Measurement or Hea. 180—Measurement in Physical Education and Health...	2-3	.....
Hea. 110—Introduction to School & Community Health Services	2	.....
Hea. 120—Methods & Materials of School Health Instruction...	.....	3
H. D. Ed. 100, 101—Principles of Human Development I, II...	3	3
Psych. 1—Introduction to Psychology.....	3	.....
Psych. 5—Mental Hygiene .....	.....	3
Electives	3	2
Total	17-18	18

<i>Senior Year</i>		
Hea. 140—Curriculum, Instruction & Observation.....	3	.....
Hea. 150—Health Problems of the School Child.....	.....	3
Ed. 110—The Teacher and School Administration or Hea. 190—Administration and Supervision of School Health Education	2-3	.....
Ed. 145—Principles of High School Teaching.....	3	.....
Ed. 148—Student Teaching in the Secondary Schools.....	8	.....
Electives .....	.....	14
Total	16-17	17

NOTE: When Ed. 148 is taken, Ed. 145, P.E. 140 and Hea. 190 must be scheduled concurrently. This may be done either semester.

Minor in Health Education

13 semester hours in Health Education and 12 semester hours in related areas.

Required Courses

Hea. 2, 4 or Hea. 40 (women); Hea. 40 (men); Hea. 50 (1), Hea. 110 (2), Hea. 120 (3) and Hea. 150 (3).

Elective courses in related areas:

6 semester hours of biological sciences and 6 semester hours of psychology or human development.

Minor in Safety Education

Students wishing to obtain a minor in Safety Education and become certified to teach Driver Education in junior and senior high schools should take the following courses: Hea. 50 (1), Hea. 60 (2), Hea. 70 (3), Hea. 80 (3), Hea. 105 (3), and Hea. 145 (3).

Physical Therapy

The first two years of the course are planned as studies in liberal arts and specific sciences, which are basic for courses taken in the last two years of specialization. The freshman and sophomore years are taken on the campus of the University of Maryland at College Park. The junior and senior years are taken on the campus of the University of Maryland at Baltimore, Division of Physical Therapy, School of Medicine. After completion of the senior year two additional months of supervised clinical experience are necessary in order to meet the national requirements for accreditation in this specialty. Upon the satisfactory fulfillment of the four year course a Bachelor of Science degree in Physical Therapy is awarded by the College of Physical Education, Recreation and Health. At the satisfactory completion of the required months of clinical experience a Certificate of Proficiency in Physical Therapy is granted by the School of Medicine.

To be eligible for the junior year program, students must pass the particular courses as herein outlined, acquired a minimum of 61 semester hours in the academic subjects plus 4 semester hours in physical activities. Male students are required to take 12 semester hours of Basic Air Force R.O.T.C. Students must maintain an average grade of "C" (2.0) and satisfy the standards of personal qualifications and physical health.

To be eligible for the senior year program, students must have passed all courses in the junior year curriculum with an average grade of "C" (2.0).

Students from accredited colleges or universities, if in good standing as to scholarship and conduct, are eligible for transfer to the Physical Therapy Curriculum of the University of Maryland. To be admitted to the junior year program such students must have completed the equivalent of the freshman and sophomore courses with these exceptions: P.T. 10, 11; P.T. 20, 21; A.S. 1, 2, 3, 4. A grade of "C" must have been earned in transfer courses. Students will not be admitted by transfer to the senior year of this curriculum.

During the summer months of the freshman, sophomore and junior years, students are urged to obtain practical field experience in Physical Medicine and Rehabilitation Units in public and private agencies, or in a camping program for handicapped children. Such experience should be arranged with the Adviser.

*For more detailed information, write to the Educational Administrator of the Physical Therapy Curriculum, School of Medicine, University of Maryland, Baltimore 1, Maryland.

Physical Therapy Curriculum (Revised, September, 1956)

Freshman and Sophomore program—College Park campus

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Chem. 1, 3—General Chemistry.....	4	4
Zool. 1—General Zoology		4
Math. 10, 11—Algebra, Trigonometry and Analytical Geometry	3	3
G. & P. 1—American Government.....	3	.....
Speech 1, 2—Public Speaking.....	2	2
A. S. 1, 2—Basic Air Force R. O. T. C. (men)		
or Elective (women)	3	3
P. T. 10, 11—Physical Therapy Orientation.....	0	0
Physical Activities	1	1
Total	19	20

Sophomore Year

Eng. 3, 4—Composition and World Literature.....	3	3
Physics 10, 11—Physics Fundamental	4	4
Zool 5, 20—Comparative Vertebrate Morphology and Vertebrate Embryology	4	4
Psych. 1—Introduction to Psychology	3	.....
*Soc. 1—Sociology of American Life.....		3
A. S. 3, 4—Basic Air Force R. O. T. C. (men)		
or Elective (women)	3	3
P. T. 20, 21—Foundations of Physical Therapy.....	1	1
Physical Activities	1	1
Total	19	19

*May substitute Phil. 1 or Econ. 31 or Econ. 37.

Junior and Senior program—Baltimore campus

	Semester	
	I	II
<i>Junior Year</i>		
Anat. 103 (a) & (b)—Human Anatomy.....	6	2½
P. T. 104—Functional Anatomy.....		2½
Physiol. 101—General Human Physiology.....	4	.....
P. T. 102 (a) & (b)—Neurophysiology; Physiology of Exercise	.....	2
Path. 105 (a) & (b)—Pathology.....	1	1
P. T. 107-108—Physical Therapy Theory & Technique I & II....	1½	1½
P. T. 106 (a) & (b)—Professional Relations, Ethics and Clinical Observation	½	½
P. T. 110—Principles of Physical Therapy Applied to Medical and Surgical Conditions.....		1½
Hist. 5, 6—History of American Civilization.....	3	3
Ed. 90—Development and Learning.....	3	.....
Psych. 5—Mental Hygiene.....		3
Total	19	17½

<i>Senior Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
P. T. 151—Therapeutic Exercise.....	5	.....
P. T. 152—Rehabilitation .....	.....	3
P. T. 153—Physical Therapy Theory and Technique III.....	4	.....
P. T. 155—Nursing Procedures Related to Physical Therapy.....	1½	.....
P. T. 160 (a) & (b)—Principles of Physical Therapy Applied to Medical and Surgical Conditions.....	4	2
Psych. 161—Psychology for the Handicapped.....	1	.....
P. T. 157—Administrative and Clinical Observation.....	1	.....
P. T. 154—Interprofessional and Social Agencies Correlation .....	.....	1
P. T. 156—Current Literature .....	.....	1
P. T. 158—Clinical Experience.....	.....	6
Total	16½	13
Clinical Experience—8 weeks, July and August.		

SPECIAL INFORMATION

Transfer Students

Only students in good standing as to scholarship and conduct are eligible to transfer under the general University regulations. Basic courses in health, science, and physical activity must be completed, or satisfactory competence demonstrated, before the student will be permitted to enter advanced professional courses. It may be necessary to do additional work to meet these requirements.

Delinquent Students

The University reserves the right to request at any time the withdrawal of a student who cannot or does not maintain the required standard of scholarship, or whose continuance in the University would be detrimental to his or her health, or to the health of others, or whose conduct is not satisfactory to the authorities of the University.

Guidance

At the time of matriculation each student is assigned to a member of the faculty of the College who acts as the student's academic adviser. The choice of curricula within which the student will major will be made under faculty guidance during the first year in the Introduction to Physical Education, Recreation, and Health course required of all freshmen. Thereafter, the student will confer regularly with the faculty member assigned as his adviser.

Electives

Electives should be planned carefully, and well in advance, preferably during the orientation course the first semester, or with the student's academic adviser during the second semester. It is important to begin certain sequences as soon as possible to prevent later conflict. Electives may be selected from any department of the University in accordance with a student's professional needs. Those selected must meet with the approval of the adviser and the Dean of the College.

Equipment

Students will be required to provide individual equipment for certain courses, such as archery, badminton, golf, and tennis.

Uniforms

Suitable uniforms, as prescribed by the College, are required for the activity classes and for student teaching. These uniforms should be worn only during professional activities.

Men—During the freshman and sophomore years, men will wear red and black T-shirts, black trunks, white socks, white gym shoes, supporter and sweat suit. During the junior year, men will purchase full length black pants with gold braid on side and a white jacket, which are required for student teaching.

Women—Tailored maroon shorts, white shirt, ankle socks, and tennis shoes, dance leotard and skirt, and warm-up suit.

For Student Teaching—An appropriate teaching costume will be selected under the guidance of the supervisor of student teaching at the beginning of the junior year.

Minors

It is relatively easy for any student majoring in this College to complete the requirements for a minor as indicated after each major curriculum. Those who plan to teach in the public schools should also qualify in an academic area if possible. This is more difficult with the limited number of elective credits and must be planned carefully in advance, preferably during the freshman year. If it seems advisable, the Dean may waive certain specified courses to allow development of a needed minor, or the student may be able to carry a heavier load if his grade average permits.

For a teaching minor, Education 140 should be taken in the minor field and practice teaching should be divided between the major and minor fields.

Students majoring in Physical Education, Health Education or Recreation should begin preparing for a teaching minor in a subject matter area during his sophomore year, if possible. Many opportunities exist in junior and senior high schools for a combination teacher of physical education and a subject-matter course. It is highly desirable for a student majoring in the professional areas in this College to have a teaching minor in a subject-matter area upon graduation.

English Minor: A minor in English requires 26 semester hours. It includes 12 semester hours in Composition and Literature, 3 semester hours in Advanced American Literature and 11 semester hours of electives.

Social Science Minor: For a minor in this group, 24 semester hours are required as follows: History, 18 semester hours (including one year each of American and European History), Economics, sociology, government, consumer education or geography, 6 semester hours: and 12 semester hours of electives in the social sciences.

Mathematics Minor: For a minor in this area, 20 semester hours are required including the following courses: Math 2—Solid Geometry (2), Math 14—Plane Trigonometry (2), Math 15—College Algebra (3), Math 17—Analytic Geometry (4) and Math 20, 21—Calculus (4, 4). Students who have solid geometry in high school or who pass satisfactorily an examination in this subject need not take Math 2. Electives in mathematics are selected with the assistance of the adviser.

Science Minor: 30 semester hours are required for a minor in this area including the following courses: Chem. 1, 3—General Chemistry (4, 4), Zoology 1—General Zoology (4), Botany 1—General Botany (4), Physics 10, 11—Fundamentals of Physics (4, 4) or Physics 1, 2—Elements of Physics (3, 3). Other courses will be chosen subject to the approval of the student's major adviser and of the science department in which his interest lies.

Minors of 20 semester hours are offered in chemistry, in physics, and in biological sciences. A minor in biology must be supported by a one-year course in chemistry. A minor in physics must be supported by a one-year course in chemistry. A minor in chemistry must be supported by a one-year course in physics.

Speech Minor: A minor of 22 semester hours is offered in Speech. The minimum requirements for this minor are 12 semester hours in addition to the 10 semester hours of departmental requirements in Speech 1, 2, 3, and 4. The 12 semester hours above the departmental requirements must include 6 semester hours of courses numbered 100 or higher. All programs for minors must be approved by the departmental adviser.

Normal Load

The normal load for students in this College is 15 credits per semester, exclusive of the credits for required military science for men, and health for women. The requirements in physical education for men, and in physical education and health for women are fulfilled by professional courses in the College. Thus the normal load for freshman and sophomore men is 19 credits; for women 17 credits. No junior or senior may register for more than 19 hours unless he has a "B" (3.0) average for the preceding semester and approval of the Dean of the College.

Freshman and Sophomore Programs

The work of the first two years in this College is designed to accomplish the following purposes: (1) provide a general basic or core education and prepare for later specialization by giving a foundation in certain basic sciences; (2) develop competency in those basic techniques of the motor activities necessary for successful participation in the professional courses of the last two years.

While much of the academic course work will be alike, the technique courses will vary considerably in the different curricula. The core of University requirements should be completed in the first two years in such manner as to justify acceptance as a junior in the desired major. The technique courses must be satisfactorily completed, or competencies demonstrated before the student can be accepted for the advanced courses in methods and in student teaching. It is very important that each requirement be met as it occurs.

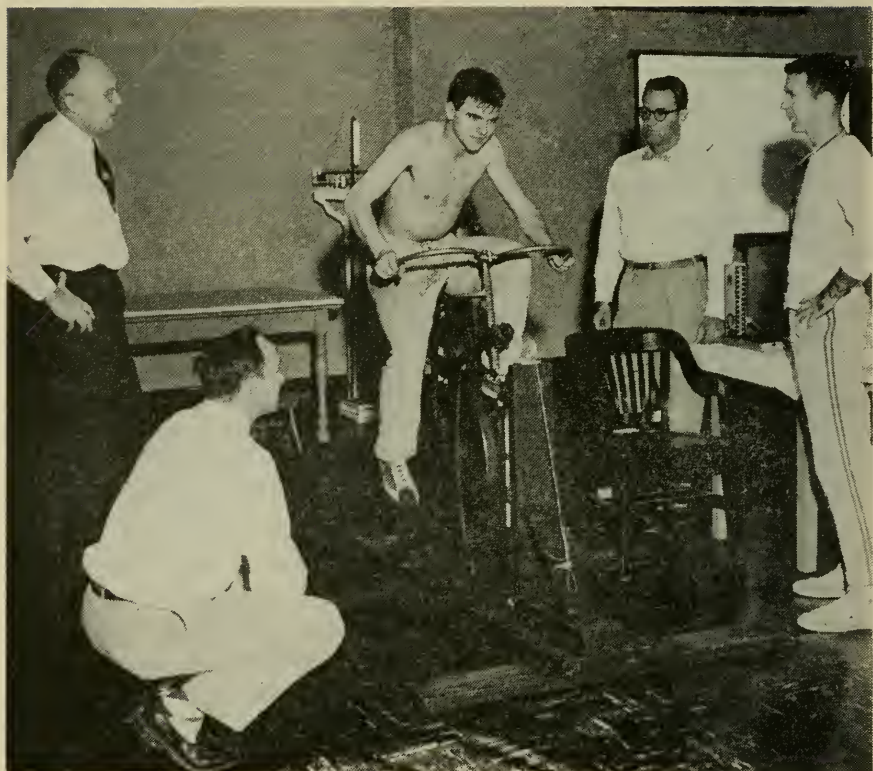
Certification

The Maryland State Department of Education certifies for teaching only when an applicant has a tentative appointment to teach in a Maryland county school. No certificate may be secured by application of the student on graduation. Course content requirements for certification are indicated with each curriculum. Certification is specifically limited to graduates who "rank academically in the upper four-fifths of the class and who make a grade of 'C' or better in student teaching." In order to insure the meeting of these requirements, students will not be approved for student teaching except as indicated below. A student intending to qualify as a teacher in Baltimore, Washington, or other specific situations should secure a statement of certification requirements before starting work in the junior year and discuss them with his academic adviser.

Student Teaching

Opportunity is provided for student teaching experience in Physical Education or Health Education, or Health and Physical Education. The student devotes eight weeks during either semester of his senior year to observation, participation, and teaching under a qualified supervising teacher in an approved junior or senior high school or in a combined program at the elementary and junior or senior high school levels in the vicinity of the University. The student progresses to gradual assumption of all of the responsibilities of the supervising teacher. A supervisor from the College of Physical Education, Recreation, and Health visits the student periodically and confers with both the student teacher and the supervising teacher, giving assistance when needed. To be eligible for student teaching the student must have an accumulative point average of 2.275, must have satisfied the competency requirements in P. E. 61, 63, 65 and 67 (men), P. E. 62, 64, 66 and 68 (women), and must have completed the following courses: P. E. 100, 180; P. E. 113, (men); P. E. 114, 116, 124, 126 (women); and P. E. 140. Women must hold two official ratings. Those students desiring to teach at the elementary level must have completed P. E. 55, P. E. 120, and P. E. 195.

For students who are unable to teach on the entire day schedule, special schedule arrangements may be made upon application to the Director of Student Teaching.



Physical education major students conduct experimental work on physical fitness in the well-equipped research laboratory.

GRADUATE STUDIES

Graduate work leading to the Master of Arts degree and the Doctor of Philosophy degree is conducted in this department in accordance with the procedures and requirements of the Graduate School. Graduate work leading to the Doctor of Education degree is conducted in cooperation with the department of education in accordance with the procedures and requirements of the Graduate School.

For graduate study a student must have earned at least 16 semester credits in education at the undergraduate level, and hold a Bachelor's or Master's degree from a college or university of recognized standing. The committee on Master's programs may interpret this requirement so that foundation work in fields other than education may be accepted in cases of graduate students not preparing for school work. The student must also satisfy the graduate Dean as to his ability to do graduate work.

Registration

A graduate student must matriculate in the Graduate School. Application for admission to the Graduate School should be made prior to date of registration on blanks obtained from the office of the Dean of the Graduate School. For further instructions a student should consult the Graduate School catalog.

Master's Degrees

A graduate student may matriculate for a Master of Arts degree. For requirements for this degree, the student should consult both the Graduate School catalog and the special material issued by this department. On matriculation, the student should select a faculty adviser from the graduate faculty of the Department of Physical Education, Recreation and Health.

Undergraduate requirements for admission to candidacy for a graduate degree in Physical Education are: human anatomy and physiology; physiology of exercise; kinesiology; adapted and special physical education; sport skills; methods; human development; measurement; principles of physical education; administration; and student teaching. In cases where a student has had successful experience in teaching Physical Education, the prerequisites of sport skills, methods, and student teaching may be waived. Undergraduate prerequisites in Recreation are: psychology; sociology; principles of recreation; administration; basic sciences; recreational activities; and practical experience. Undergraduate prerequisites in Health Education are: biological sciences; bacteriology; human anatomy; physiology; chemistry; psychology; measurement; administration; principles of health; and field work.

Every graduate student majoring in Physical Education, Recreation, or Health Education is required to take the following courses (or transfer their equivalent) before taking the qualifying examination: P. E., Rec. or Hea. 201, Foundations in Physical Education, Recreation, and Health; P. E., Rec. or Hea. 210, Methods and Techniques of Research in Physical Education, Recreation and Health; and/or P. E., Rec. or Hea. 196, Quantitative Methods; P. E., Rec. or Hea. 230, Survey Techniques in Physical Education, Recreation and Health. In addition, every graduate student must register for and complete P. E., Rec. or Hea. 200, Seminar in Physical Education, Recreation, and Health at some time during his graduate career.

Doctor's Degrees

Programs leading to the Doctor of Philosophy degree are administered for the Graduate School by this department. For requirements for the Doctor of Philosophy degree, the student should consult both the Graduate School catalog and the statement of policy relative to doctoral programs issued by this department. If the student has not already made arrangements with a member of the graduate faculty to advise him, he should consult with the chairman of the Committee on Candidacy regarding a proper adviser. Programs leading to the Doctor of Education degree are administered for the Graduate School in cooperation with the department of education.

For requirements for the Doctor of Education degree, the student should consult both the Graduate School catalog and the statement of policy relative to doctoral programs issued by the department of education.

PHYSICAL EDUCATION REQUIREMENTS FOR MEN AND WOMEN

All undergraduate men and women students classified as freshmen or sophomores, who are registered for more than six semester hours of credit are required to enroll in and successfully complete four prescribed courses in physical education and/or athletics for a total of four semester hours of credit. The successful completion of these courses is required for graduation. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Men and women who have reached their thirtieth birthday are exempt from these courses. Students who are physically disqualified from taking these courses must enroll in adaptive courses for which credit will be given. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever occurs first. Students with military service may receive credit for these courses by applying to the Air Force R.O.T.C. Records Office.

Students majoring or minoring in physical education, recreation, health education, physical therapy, or specializing in elementary school physical education and health education, may meet these requirements by special professional courses.

MEN'S PROGRAM

The program of physical education offers the college student an opportunity to acquire skills, knowledges, and appreciations in a variety of physical and sport activities, which will contribute now and in the future to more efficient physiological functioning, effective movement, improved human relations, and worthwhile use of leisure time.

All entering freshmen are required to complete P. E. 1, Orientation to Physical Education. Students are then guided into an activity in each of the three areas indicated below. The selection of an activity for each student is based upon the student's individual needs, interests, his past experience, and his level of fitness. Students who fail the swimming classification test, one of the Orientation to Physical Education requirements, are required to enroll in an elementary swimming class.

Students are guided into one activity in each of the following three areas:

Developmental and Combative Sports—Gymnastics, soccer and hand to hand combat; track and field and wrestling; modern dance; and weight training.

Team and Individual Sports—Softball and basketball; speedball and

tumbling; tennis and volleyball; touch football and volleyball; elementary swimming, advanced swimming, life saving, and fancy diving.

Recreational Activities—Archery and bowling; badminton and tennis; camping and outdoor activities; canoeing, fishing; recreational games; sailing; social dance; and square dance.

Costume

Each male student enrolled in required physical education will be furnished a red and black reversible T-shirt, black trunks, white socks, supporter, and a towel. Gymnasium shoes, and for some classes sweat clothes will be furnished by the student.

Locks and Lockers

A basket for the storage of the gymnasium uniform will be assigned each student. During class time each student secures his clothing in a locker. Locks are furnished by the student, and must be purchased from the Student Supply Store in the Student Union Building.

Women's Program

Through participation in a variety of activities, freshman and sophomore women have the opportunity to acquire skills, knowledge, and attitudes which will contribute to personal enjoyment and better physical efficiency.

Students are required to complete a unit of work in a team or individual sport, dance, orientation activities, and swimming. They enroll in P. E. 2, 4, 6, or 8. The swimming requirement may be met either by completing one of the courses or by successfully passing the proficiency test administered at the end of each semester.

Activities within the specified areas may be selected according to individual interests and needs. Students are urged to develop new skills as well as to select those in which they would like to have further experience. Each student may choose from the following activities:

Individual Sports—Archery, badminton, camping, canoeing, bowling, fishing, golf, sailing, tennis.

Team Sports—Basketball, hockey, softball, volleyball.

Dance—Folk and square, modern, social.

Orientation Activities.

Swimming—Beginning, intermediate, and advanced; life saving; synchronized.

Costume

Each woman student is expected to provide herself with gymnasium costume consisting of dark green gabardine shorts, white slip-over blouse, white socks and tennis shoes. Special sandals will be worn in modern dance classes. These may be purchased at the Maryland Book Exchange.

Locks and Lockers

A locker and lock are assigned to each student at the first meeting of her class upon presentation of her University fee receipt. At the close of the last class each one is responsible for cleaning out her locker and returning the lock.

Health Education Requirements

All freshmen women are required to satisfactorily complete two semesters of Personal and Community Health (Hea. 2, 4) for graduation. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever occurs first. This year course is designed to meet the interests and the needs of college women. It consists of units which attempt to form up-to-date scientific background for developing attitudes, habits, and skills among students that will contribute to better everyday living. Audio-visual aids, readings, reports, field trips, and special lectures help to enrich the class discussions. The University environment, the personal and group adjustments which the students must make are considered a vital part of these courses.

Women who have reached their thirtieth birthday are exempt from these courses.



Preinkert Field House is the center of Physical Education for Women. A swimming pool, dance studio, gymnasium and departmental offices are located here.

REQUIRED COURSES FOR ALL FRESHMEN AND SOPHOMORES *

P. E. courses open only to men are given in odd numbers.

P. E. courses open only to women have even numbers.

P. E. courses ending in zero are open to both men and women.

Physical education fee per semester (to be charged any student registered for any physical activity course), \$3.00.

A. Physical Education

A student having a physical handicap which prevents participation in the regular required or service program will be assigned to an adapted activity suitable to his physical capacity. This refers to P. E. 1 to 8, inclusive.

***P. E. 1. Orientation to Physical Education (1).** Three hours a week. First and second semesters. (Laboratory fee, \$3.00).

The purpose of this course is to give the student a better understanding and appreciation of the place of sports and physical education in the American way of life. It is designed to introduce the student to a variety of sport skills as indicated in each of the three areas: (1) Developmental and Combative Sports, (2) Team and Individual Sports, (3) Recreational Activities. In addition, each student is acquainted with the fitness, health, social, and leisure-time values inherent in continued participation in sports and other physical education activities.

***P. E. 2, 4. Basic Skills of Sports and Rhythms (1, 1).** Three hours a week. First and second semesters. (Laboratory fee, \$3.00).

Required of all freshman women. Instruction and practice in fundamentals of sports, rhythms, body mechanics, and swimming.

***P. E. 3. Developmental and Combative Sports (1).** Three hours a week. First and second semesters. Prerequisite, P. E. 1. (Laboratory fee, \$3.00).

Students may elect from the following: Gymnastics, soccer and hand to hand combat; track and field and wrestling; modern dance; and weight training.

***P. E. 5 Team and Individual Sports (1).** Three hours a week. First and second semesters. Prerequisite, P. E. 1. (Laboratory fee, \$3.00).

Students may elect from the following: Softball and basketball; speedball and tumbling; tennis and volleyball; touch football and volleyball; elementary swimming, advanced swimming, life saving, and fancy diving.

***P. E. 6, 8. Selected Sports and Dance (1, 1).** Three hours a week. First and second semesters. (Laboratory fee, \$3.00).

Sophomores may elect from the following: Archery, badminton, fishing, basketball, bowling, camping, folk and square dance, modern dance, social dance, golf, hockey, softball, speedball, swimming, tennis, volleyball, sailing and canoeing.

* Physical activities required by freshmen and sophomores in all colleges except those majoring in physical education, recreation and health.

***P. E. 7. Recreational Activities (1).** Three hours a week. First and second semesters. Prerequisite, P. E. 1. (Laboratory fee, \$3.00).

Students may elect from the following: Archery and bowling; badminton and tennis; camping and outdoor activities; canoeing; fishing; recreational games; sailing; social dance; and square dance.

P. E. S19. Physical Education Activities (1-6). Summers only.

Instruction and practice in selected sports; tennis, badminton, archery, golf, swimming, and square dance. (Laboratory fee, \$3.00).

Note. (1). Not available for credit to Physical Education Majors.

Note. (2). Non-majors in Physical Education may use this credit to fulfill graduation requirements in Physical Education.

B. Health Education (Required for all women)

Hea. 2, 4. Personal and Community Health (2, 2). First and second semesters.

A course concerned with health principles as applied to the individual as well as with health of people as a group and with organizations, both private and governmental, which attempt to improve health conditions.

PHYSICAL EDUCATION, RECREATION, AND HEALTH PROFESSIONAL COURSES

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designed by numbers as follows:

1 to 99: courses for undergraduates.

100 to 150: courses for advanced undergraduates.

150 to 199: courses for advanced undergraduates and graduates.

200 to 299: courses for graduates only.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

Physical education fee per semester (to be charged any student enrolled in any physical activity course), \$3.00.

* Physical activities required by freshmen and sophomores in all colleges except those majoring in physical education, recreation and health.

A. Physical Education

P. E. 30. Introduction to Physical Education, Recreation, and Health (2).

First and second semesters.

Development of understanding and appreciation of the historic and significant purpose and place of each of the specialized areas in general education. A study of the educational and personal requirements and opportunities of a career in each professional area. Students will be acquainted with the status and trends of each area.

P. E. 40. Basic Body Controls (1). Three hours a week. First and second semesters. Second semester arranged for benefit of transfers.

This course is designed to acquaint the student with the fundamental principle and techniques of body movement, and to provide for practical application in sports, rhythmic and gymnastic activities. In addition, the course introduces balanced posture in standing, walking, sitting and work skills, as well as relaxation. (Laboratory fee, \$3.00).

P. E. 50. Rhythmic Analysis and Movement (1-2). Three hours a week. First and second semesters.

The development of rhythmic sensitivity through an analysis of rhythm and its application to movement. Percussion instruments will be used. (Laboratory fee, \$3.00).

P. E. 52, 54. Dance Techniques (1, 1). Three hours a week. First and second semesters.

Introduction to techniques of modern dance, with simple approaches to composition. (Laboratory fee, \$3.00).

P. E. 55. Elementary School Rhythmic Activities (2). First and second semesters and summer.

This course will survey the various types of rhythmic activities suitable for use in the elementary school. Basic rhythms, singing games, and folk and square dancing will be considered in terms of their use at the various grade levels as well as the best accepted methods of teaching these activities.

P. E. 56. Skills and Methods in Folk and Square Dance (1). One lecture and three laboratories a week. First and second semesters.

This course is designed to acquaint the student with basic skills in Folk and Square Dance and to give theory of class organization, analysis, teaching techniques, and practice in "calling" for junior and senior high school programs. (Laboratory fee, \$3.00).

P. E. 58. Skills and Methods in Social Dance (1). One lecture and three laboratories a week. First and second semesters.

This course is designed to acquaint the student with basic skills in Social Dance and to give theory of class organization, analysis and teaching techniques for junior and senior high school programs. (Laboratory fee, \$3.00).

P. E. 59. Skills in Folk, Square and Social Dance (1). Three hours a week. First and second semesters. Prerequisite, P. E. 50.

This course is designed to acquaint the student with the basic skills in Social, Folk, and Square Dance for use in schools and recreational groups. (Laboratory fee, \$3.00).

P. E. 60. Dance Composition (2). Three hours a week. First and second semesters.

The study of dance content and relationship to form and style. Theory and laboratory problems in composition. Modern dance forms. (Laboratory fee, \$3.00).

P. E. 61, 63. Sport Skills and Gymnastics (2, 2). Six hours a week. First and second semesters.

Progressive techniques and practice of skills in apparatus, calisthenics, cross-country, dual recreation activities, mass games and relays, soccer, touch football, track, tumbling, and volleyball. (Laboratory fee, \$3.00).

P. E. 62, 64. Elementary Techniques of Sports and Gymnastics (2, 2). Six hours a week. First and second semesters.

Progressive techniques and practice of seasonal sports, stunts, tumbling, and gymnastic exercises. (Laboratory fee, \$3.00).

P. E. 65, 67. Sport Skills and Gymnastics (2, 2). Six hours a week. First and second semesters.

Progressive techniques and practice of skills in basketball, bowling, swimming, dual net games, golf, lacrosse, softball, tennis and wrestling. (Laboratory fee, \$3.00).

P. E. 66, 68. Techniques of Sports (2, 2). Six hours a week. First and second semesters. Prerequisite, P. E. 40, 62, 64.

Techniques of selected team and individual sports. (Laboratory fee, \$3.00).

P. E. 70. Intermediate Modern Dance (2). Four laboratory periods a week. First and second semesters. Prerequisites, P. E. 52, 54 or permission of instructor.

Modern dance techniques. Compositional problems. (Laboratory fee, \$3.00).

P. E. 71. Elementary Swimming (1). First and second semesters.

Progressive techniques and practice of elementary swimming. Course includes basic and intermediate swimming instruction. (Laboratory fee, \$3.00).

P. E. 72. Elementary Swimming and Diving (1). Three hours a week. First and second semesters.

Progressive techniques and practice in the elementary phases of swimming and diving, designed to make the student self-sufficient in deep water. (Laboratory fee, \$3.00).

P. E. 73. Advanced Swimming (1). First and second semesters. Prerequisite, P. E. 71, or equivalent.

Progressive techniques and practice of advanced swimming skills, water stunts and survival swimming. (Laboratory fee, \$3.00).

P. E. 74. Intermediate Swimming and Diving (1). Three hours a week. First and second semesters. Prerequisite, P. E. 72, or equivalent.

Continuation of the techniques in P. E. 72 to include proficiency in the standard swimming strokes and the ability to perform a fully coordinated standing dive. (Laboratory fee, \$3.00).

P. E. 75. Life Saving and Water Safety (1). Three hours a week. First and second semesters. Prerequisites, P. E. 73, or equivalent.

Progressive techniques and practice of life saving and water safety skills. Course includes the Senior Life Saving material of the American Red Cross and the Y.M.C.A. It is possible to secure the American Red Cross Water Safety Instructorship through this course.

P. E. 76. Advanced Swimming and Diving (1). Three hours a week. First and second semesters. Prerequisites, P. E. 72 and P. E. 74, or equivalent.

Continuation of the techniques of P. E. 74, to include more advanced swimming strokes, fancy diving, water stunts, and synchronized swimming. (Laboratory fee, \$3.00).

P. E. 77. Methods of Aquatics (2). Three hours a week. First and second semesters. Prerequisite, P. E. 73, or equivalent.

This course is designed to train students for aquatic leadership in schools, camps, and clubs. Course includes teaching methods, administration, facilities and equipment. (Laboratory fee, \$3.00).

P. E. 78. Methods of Teaching Aquatics (2). One lecture and three laboratory hours a week. First and second semesters. Prerequisites, P. E. 74, 76, or equivalents.

This course is designed to prepare the students to teach swimming and diving, administer swimming pools, conduct recreational aquatic activities, and direct camp aquatic programs. (Laboratory fee, \$3.00).

P. E. 79. Fancy Diving (1). Three hours a week. First and second semesters.

Progressive techniques and practice of fancy diving. Course will include work on the five categories of dives.

P. E. 80. Advanced Modern Dance (2). Four laboratory periods a week. First and second semesters. Prerequisites, P. E. 52, 54, 70, or permission of the instructor.

Continuation of P. E. 70 in more advanced form. (Laboratory fee, \$3.00).

P. E. 90. Workshop (1). Three laboratory hours a week. First and second semesters. Permission of instructor only.

Planning, composition, and presentation of demonstrations. A total of 6 credits may be earned. (Laboratory fee, \$3.00).

For Advanced Undergraduates and Graduates*

***P. E. 100. Kinesiology (4).** First and second semesters and summer. Three lectures and two laboratory hours a week. Prerequisites, Zool. 1, 14, and 15, or the equivalent.

The study of human movement and the physical and physiological principles upon which it depends. Body mechanics, posture, motor efficiency, sports, the performance of atypical individuals, and the influence of growth and development upon motor performance are studied.

P. E. 101, 103. Organization and Officiating in Intramurals (1, 1). Six hours a week. First and second semesters.

Organization, administration, and promotion of intramurals at various school levels. Types of tournaments, units of competition, handling of student leader personnel, etc.

P. E. 110. Dance Production (3). First and second semesters. Prerequisites, P. E. 52, 54, 60, 70, 80, or equivalent.

Planning of group and individual choreography. Aspects of dance production such as staging, costumes, make-up for dancers, acquainting the student with elements of dance and theatre. Demonstration planning.

P. E. 113. Methods and Materials for Secondary Schools (3). First and second semesters. Prerequisites, P. E. 30, 50, 60, 61, 63, 65, 67.

This course is designed to help the student acquire a knowledge of the application of methods which directly or indirectly influence teacher-pupil learning situations in physical education at the secondary school level. Students will be required to arrange time to work with a staff physical education instructor in order to gain some practical teaching experience. Class activities include discussions, reports, outside readings, and teaching demonstrations.

P. E. 115. Methods and Materials for Secondary Schools (1). Three laboratory hours per week arranged. Second semester. Prerequisite: P. E. 113.

This is a laboratory course designed to help the student acquire practical experience in the courses of the University required program. The student will be given the opportunity to observe and assist in teaching under the direct supervision of a regular staff member.

P. E. 114, 116. Methods in Physical Education for Secondary Schools (3, 1). Three lectures a week. First and second semesters. Prerequisites, P. E. 40, 62, 64, 66, 68.

Application of educational philosophy and principles to class organization and teaching techniques in individual sports, recreational games, gymnastics, body mechanics, dance, and relaxation for junior and senior high school programs.

***NOTE:** Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

***P. E. 120. Physical Education for the Elementary School (3).** First and second semesters and summer.

This course is designed to orient the general elementary teacher to physical education. Principles and practices in elementary physical education will be presented and discussed and a variety of appropriate activities will be considered from a standpoint of their use at the various grade levels.

P. E. 123, 125. Coaching Athletics (3, 3). Two lectures and two laboratory hours a week. First and second semesters.

Methods of coaching the various competitive sports commonly found in high school and college programs.

P. E. 124, 126. Practicum in Leadership (2, 2). One lecture and one three hour laboratory period a week. First and second semesters. Prerequisites, permission of instructor.

This course is designed to prepare the student for the student teaching experience by assisting in non-professional University classes. It also provides guidance in methods and materials of teaching in the junior and senior high schools.

P. E. 130. Fundamentals of Body Dynamics (3). First and second semesters and summer.

This course is designed to acquaint the elementary teacher with the scientific principles of mechanical-anatomical analysis and physiology of activities as they relate to physical growth and development.

P. E. S131. Coaching Basketball (2). Summer only.

Methods of coaching basketball in high school and college.

P. E. S133. Coaching Football (2). Summer only.

Methods of coaching football in high school and college.

P. E. 135. Coaching Swimming and Diving (2). Three hours a week. First and second semesters.

A thorough analysis of the techniques of coaching swimming and diving. Course includes a systematic treatment of the philosophy, historical development and psychological theories of coaching aquatics.

P. E. 140. Curriculum, Instruction and Observation (3). First and second semesters. Prerequisites, men—P. E. 113; women—P. E. 114, 116, 124, 126.

A course designed to provide directed observations and discussion, coordinating these experiences with those from previous methods courses in the development of curricula for health and physical education. The course is planned to prepare for student teaching which follows in the same semester. The observations will be made of health and physical education programs in junior and senior high schools. This course must be taken during the semester in which the student is doing student teaching.

*NOTE: Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected carry out a special project.

***P. E. 155. Physical Fitness of the Individual (3).** First and second semesters and summer.

A study of the major physical fitness problems confronting the adult in modern society. Consideration is given to the scientific appraisal, development and maintenance of fitness at all age levels. Such problems as obesity, weight reduction, chronic fatigue, posture, and special exercise programs are explored. This course is also open to persons outside the fields of physical education and health.

***P. E. 160. Theory of Exercise (3).** First and second semesters and summer. Two lectures and one laboratory hour a week. Prerequisite, Zool. 1, 14, and 15, and P. E. 100 or the equivalent.

A study of exercise and its physiological and kinesiological bases. Special emphasis is placed upon the application of exercise to the development and maintenance of physical efficiency. Corrective therapy, conditioning for athletics, the effects of exercise and training on the human organism, fatigue, staleness, relaxation, and the nature of athletic injuries are investigated.

***P. E. 170. Supervision in Elementary School Physical Education (3).** First and second semesters and summer. Prerequisite, P. E. 120.

Principles and techniques of supervision are studied from a standpoint of their application in improving the learning situation in elementary school physical education. Strong emphasis will be given to the concept that modern supervision in elementary school physical education should be based on the application of fundamental democratic principles.

***P. E. 180. Measurement in Physical Education and Health (3).** First and second semesters and summer. Two lecture and two laboratory periods a week. Prerequisite, Placement in Group 1 or 2 on Mathematics Entrance test or Math. 0.

The application of the principles and techniques of educational measurement to the teaching of health and physical education; study of the functions and techniques of measurement in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

P. E. 181. Advanced Training and Conditioning (3). Second semester. Two lectures and two laboratory hours a week. Prerequisites, Zool. 14, 15; P. E. 100.

The training and physical conditioning of athletics. Treatment of athletic injuries by taping, massage, hydro-therapy, physical therapy, and electro-therapy Remedial and conditioning exercises. Theory and practice.

***P. E. 182. History of Dance (3).** First and second semesters.

The development of dance from primitive to modern times and the relationship of dance forms to patterns of culture. A historical survey of the changing place of dance in civilization. Research problems.

***P. E. 184. Theory and Philosophy of Dance (3).** First and second semesters.

The study of the basic theories and philosophies of modern dance. Investigation of form, content and structure in dance and in relationship to other arts. The role of dance in education.

*** NOTE:** Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected carry out a special project.

***P. E. 189. Field Laboratory Projects and Workshop (1-6).** First and second semesters and summer.

A course designed to meet the needs of persons in the field with respect to work-shops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P. E., REC., HEA., or ED. 189 is six.

***P. E. 190. Administration and Supervision of Physical Education, Recreation, and Health (3).** First and second semesters and summer.

The application of the principles of administration and supervision to physical education, recreation, and health. This course must be taken during the semester in which the student is doing student teaching.

***P. E. 191. The Curriculum in Elementary School Physical Education (3).** First and second semesters and summer. Prerequisite, P. E. 120.

Curriculum planning and construction is considered from a standpoint of valid criteria for the selection of content in elementary school physical education. Desirable features of cooperative curriculum planning in providing for learning experiences will be presented and discussed.

P. E. 192. Percussion Accompaniment and Music for Dance (2). First and second semesters. One lecture and two laboratory hours per week.

Techniques of percussion playing and its use as dance accompaniment are emphasized. Learning to use the instruments in composition and improvisation is stressed. Music for dance and dance notation is included in the course.

***P. E. 195. Organization and Administration of Elementary School Physical Education (3).** First and second semesters and summer. Prerequisite, P. E. 120.

This course considers the procedures which are basic to the satisfactory organization of all phases of the elementary school physical education program. Stress will be placed on the organizational and administrative factors necessary for the successful operation of the program in various types of elementary schools. Strong emphasis will be placed on organization and administration from a standpoint of adapting the program to specific situations.

***P. E. 196. Quantitative Methods (3).** First and second semesters and summer.

A course covering the statistical techniques most frequently used in research pertaining to physical education, recreation, and health education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

*NOTE: Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected carry out a special project.



Student teaching in swimming is a part of the practical experience for students preparing for a career in physical education.

FOR GRADUATES

P. E. 200. Seminar in Physical Education, Recreation, and Health (1). First and second semesters and summer.

P. E. 201. Foundations in Physical Education, Recreation, and Health (3). First and second semesters and summers.

A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

P. E. 202. Status and Trends in Elementary School Physical Education (3). First and second semesters and summer.

An analysis of the current status and implications for future trends in physical education at the elementary school level. Open to experienced persons in all phases of education.

P. E. 203. Supervisory Techniques in Physical Education, Recreation, and Health (3). First and second semesters and summer.

A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

P. E. 205. Analysis of Contemporary Athletics (3). First and second semesters and summer.

A study of current problems, practices, and national issues of paramount importance to the conduct of athletic competition in a democracy.

P. E. 210. Methods and Techniques of Research (3). First and second semesters and summer.

A study of methods and techniques of research used in physical education, recreation, and health education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

P. E. 215. Principles and Techniques of Evaluation (3). First and second semesters and summer. Prerequisite, An Introductory course in Measurement or permission of the instructor.

A study of currently used means of evaluating the performance of students and the effectiveness of programs of physical education in schools and colleges. Specific problems concerning evaluation, brought in by members of the class, will be analyzed.

P. E. 230. Source Material Survey (3). First and second semesters and summer.

A library survey course, covering the total areas of physical education, recreation, and health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

P. E. 250. Mental and Emotional Aspects of Sports and Recreation (3). First and second semesters and summer. Prerequisites, Psych. 1, or H. D. Ed. 100, 101, or equivalents.

An exploration of psychological aspects of physical education, athletic sports and recreation. Applications of psychology are made to teaching and learning, coaching, athletic efficiency (motivation, emotional upset, staleness, etc.), and the problem of interpreting physical education and recreation experiences. Means of studying problems of these kinds are evaluated.

P. E. 280. Scientific Bases of Exercise (3). First and second semesters and summer. Prerequisites, Anatomy, Physiology, P. E. 100, 160, or equivalent.

A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

P. E. 287. Advanced Seminar (1-2). First and second semesters and summer. Prerequisite: P. E. 201, or Hea. 220, or equivalent, or permission of the instructor.

This course is a study of the current problems and trends in the selected fields of Physical Education, Recreation, and Health.

P. E. 288. Special Problems in Physical Education, Recreation and Health (1-6). First and second semesters and summer.

Master or Doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

P. E. 289. Research—Thesis (1-5). First and second semesters and summer.

Students who desire credits for a Master's thesis, a Doctoral dissertation, or a Doctoral project should use this number.

P. E. 290. Administrative Direction of Physical Education, Recreation, and Health (3). First and second semesters and summer.

This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

P. E. 291. Curriculum Construction in Physical Education and Health (3). First and second semesters and summer.

A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

B. Recreation

Rec. 10, 11. Recreation Orientation (0, 0). First and second semesters.

Through occasional class sessions and attendance at various meetings on and off campus, those majoring in recreation will have an opportunity to become acquainted with their fellow students, with the national organizations in the field and their leaders and activities, and with the broad scope of recreation and its various divisions and interests.

Rec. 30. History and Introduction to Recreation (2). First and second semesters.

An introduction to the beginnings, growth, and possibilities in recreation as presently fostered by individuals, agencies and governments; attitudes toward and theories of play; historical events and figures; present principles and objectives; organizations and groups interested in recreation, and their relationships; job opportunities, specifications and demands; self analysis of individual student interests; limitations and capabilities in light of these specifications and demands.

Rec. 40. Camp Counseling and Administration (2). First and second semesters.

A study of the philosophy and techniques of camp counseling including the qualifications, responsibilities and skills involved; the basic organization, administration and program planning practices and problems of camping as a whole; the relationship of these practices and problems to the counselor and his or her probable success. Outdoor skills will be taught and practiced insofar as possible.

FOR ADVANCED UNDERGRADUATES AND GRADUATES *

Rec. 100. Co-recreational Games and Programs (2). First and second semesters and summer.

Compilation and sampling of the techniques for the use of low organization and party games and activities. Emphasis is placed upon those activities of value to a recreation leader or teacher, and upon the placement, sequence and variation of such activities for all age levels and interests.

*Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses will be expected to carry out a special project.

Rec. 110. Nature Lore (1-2). Second semester.

An overall orientation course conducted in conjunction with the National Park Service of Washington, D. C., and covering various of the areas of physical and biological sciences; rocks, trees, animals, birds, flowers, etc. Two credits will be granted those students completing the maximum requirements of the course including evening lectures, Saturday and/or Sunday observations, the Saturday Outdoor Leadership Workshop (24 hours), and periodic class meetings held at the University of Maryland.

***Rec. 120. Program Planning (3). First and second semesters. Prerequisite Rec. 30.**

Study of the various aspects, problems and practices of family, agency and governmental recreation programs and their planning, with particular emphasis on playground-community and teen-age center plans and procedures. This course should be of interest and value to those students planning to do part-time summer playground work.

Rec. 140. Observation and Field Work in Recreation (5). First and second semesters.

Included are observation and field work at various of the facilities available; particular emphasis will be placed on whatever observations may be needed to complete coverage of the various opportunities; field work opportunities themselves will be selected and assigned on the basis of student interest and future job plans.

***Rec. 150. Camp Management (3). First and second semesters and summer.**

An advanced camping course for those students with previous training and experience; organization, administration, programming, current trends, evaluation, and special problems. Whenever possible, visiting specialists and field trips will be included.

Rec. 170. General Fundamentals of Recreation (3). First and second semesters.

This course is designed for students not majoring in recreation who wish to develop some understanding of the place, importance and potentialities of recreation in modern life. Included will be limited study of the areas of philosophy, program planning, personality and leadership techniques, organization and administration, and interrelationships with other fields.

***Rec. 180. Leadership Techniques and Practices (3). First and second semesters.**

A study of the various kinds of levels of leadership exerted by professional and semi-professional workers, some of the difficulties and probable weaknesses to be met, and some of the tangible techniques to be used in personnel, staff, and public relationships; handling of problem children, of personnel, of public relations campaigns, committee gatherings, etc. The group work approach will be emphasized and used, insofar as possible, in the solution of particular problems that grow out of practical experiences in handling on and off campus groups.

Rec. S184. Outdoor Education (6). Summer only.

A full-time program for teachers, administrators, recreation leaders, and social workers in functionalized child development through utilization of the surrounding natural environment and resources. Guided group work implements the acquired techniques for use with children in developing education in democratic living, worthy use of leisure, certain character traits and also for vitalizing such subject-matter areas as mathematics, language, arts, social and natural sciences, music, health and physical education, graphic and plastic arts.

*Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses will be expected to carry out a special project.

***Rec. 189. Field Laboratory Projects and Workshop (1-6).** First and second semesters and summer.

A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P. E., Rec., Hea., or Ed. 189 is six.

***Rec. 190. Organization and Administration of Recreation (3).** First and second semesters and summer.

A study of the organizational patterns for and administrative problems involved in the various kinds of operating recreation groups and agencies; forms of organization; finance and budgets; personnel; areas, facilities, and equipment; public relations.

***Rec. 196. Quantitative Methods (3).** First and second semesters and summer.

A course covering the statistical techniques most frequently used in research pertaining to physical education, recreation and health education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

FOR GRADUATES

Rec. 200. Seminar in Physical Education, Recreation, and Health (1). First and second semesters and summer.

Rec. 201. Foundations of Physical Education, Recreation and Health (3). First and second semesters and summer.

A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

Rec. 202. Philosophy of Recreation (2). First and second semesters and summer.

A study of the meanings, relationships, and services of recreation as expressed by past and present authorities and leaders. This course should be of interest to people active in education, social work and related fields.

Rec. 203. Supervisory Techniques in Physical Education, Recreation and Health (3). First and second semesters and summer.

A study of current concepts, principles and techniques of supervision and their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

Rec. 204. Modern Trends in Recreation (3). First and second semesters and summer.

A study of emphasis and recent developments in the recreation field as a whole and within its various specialized areas, making particular reference to the current and new literature.

*Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses will be expected to carry out a special project.

Rec. 210. Methods and Techniques of Research (3). First and second semesters and summer.

A study of methods and techniques of research used in physical education, recreation, and health education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

Rec. 230. Source Material Survey (3). First and second semesters and summer.

A library survey course, covering the total areas of physical education, recreation, and health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

Rec. 240. Industrial Recreation (3). First and second semesters and summer.

An introductory study of the philosophy of and practices and problems in industrial recreation. Where possible the course will include opportunities for observation and field work.

Rec. 260. Hospital Recreation (3). First and second semesters and summer.

An introductory study of the philosophy of and practices and problems in hospital and institutional recreation. Where possible the course will include opportunities for observation and field work.

Rec. 287. Advanced Seminar (1-2). First and second semesters and summer. Prerequisites: P. E. 201, Hea. 201, Rec. 201, or Hea. 220, or permission of the instructor.

This course is a study of the current problems and trends in the selected fields of physical education, recreation and health education.

Rec. 288. Special Problems in Physical Education, Recreation and Health (1-6). First and second semesters and summer.

Master of Doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

Rec. 289. Research—Thesis (1-5). First and second semesters and summer.

Students who desire credits for a Master's thesis, a Doctoral dissertation, or a Doctoral project should use this number.

Rec. 290. Administrative Direction of Physical Education, Recreation and Health (3). First and second semesters and summer.

This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class member' problems.

C. Health Education

Hea. 10. Orientation to Health Education (1). First and second semesters.

This course explores the field of Health Education in both the school and the community from the point of view of the health educator. Professional preparation and career opportunities are considered.

Hea. 30. Introduction to Physical Education, Recreation, and Health (3). First and second semesters.

Development of understanding and appreciation of the historic and significant purpose and place of each of the specialized areas in general education. A study of the educational and personal requirements and opportunities of a career in each professional area. Students will be acquainted with the status and trends of each area.

Hea. 40. Personal and Community Health (3). First and second semesters.

Meaning and significance of physical, mental, and social health as related to the individual and to society; important phases of national health problems; constructive methods of promoting health of the individual and the community; health problems of college students and young people with special emphasis on health knowledge for the future teacher.

Hea. 50. First Aid and Safety (1). First and second semesters.

Standard and Advanced American Red Cross courses in first aid; safety physical activities.

Hea. 60. Advanced First Aid (2). First and second semesters.

Opportunity to secure Red Cross Advanced and Instructor's Certificate.

Hea. 70. Safety Education (3). First and second semesters.

A study of the causes of accidents and methods of prevention, including principles of traffic and industrial safety.

Hea. 80. The Driver, His Characteristics and Improvement (3). First and second semesters and summer. Prerequisites: Hea. 50, 70.

The aim of this study is to treat the driver-behavior problem in its relation to many of the psycho-physical factors and forces in the traffic environment that impinge upon the man behind the wheel.

FOR ADVANCED UNDERGRADUATES AND GRADUATES *

Hea. 105. Basic Driver Education (3). First and second semesters and summer. Prerequisites: Hea. 50, 70, 80.

This course is a study of the place of the automobile in modern life and deals with the theory and practice of the following: traffic accidents and other traffic problems; objectives and scope of driver-education; motor vehicle laws and regulations; basic automobile construction and maintenance from the standpoint of safety; methods in classroom instruction; aids to learning and practice driving instruction.

Hea. 110. Introduction to School Health Education (2). First and second semesters and summer. Prerequisites: Hea. 2 and 4, or Hea. 40.

This course deals with many aspects of school and community health programs, and the backgrounds and history of the services studied with their relationships to each other directly and indirectly. Various phases of healthful living are discussed as a part of school and community health. Special emphasis is placed upon the health services of both programs.

Hea. 120. Methods and Materials of School Health Instruction (3). First and second semesters. Prerequisites: Hea. 40 or equivalent.

This course considers various plans of teaching health in schools. Health education teaching methods and materials are evaluated with regard to their application to practical situations.

Hea. 140. Curriculum, Instruction and Observation (3). First and second semesters and summer. Prerequisites: Hea. 40, 110, 120.

A course designed to provide directed observation and discussion, coordinating these experiences with those from previous methods courses in the development of curricula for health and physical education. The course is planned to prepare for student teaching which follows in the same semester. The observations will be made of health and physical education programs in junior and senior high schools. This course must be taken during the semester in which the student is doing student teaching.

Hea. 145. Advanced Driver Education (3). First and second semesters and summer. Prerequisites: Hea. 50, 70, 80, 105.

Progressive techniques and practice of advanced driver-education; comprehensive programming for traffic safety; psychology of traffic safety; improving the attitudes of young drivers; teaching to meet driving emergencies; program planning in driver-education; consumer education; resources and agencies; the teacher and driver-education; measuring and evaluating results; driver-education for adults; new developments in driver-education; insurance and liability, and the future of driver-education.

***Hea. 150. Health Problems of Children and Youth (3).** First and second semesters and summer.

*Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

This course involves a study of the health needs and problems of pupils from the primary grades through high school. Physical, mental, and psychosomatic aspects of health are considered in relation to the developmental and school levels. Consideration is given to such topics as: diet selection and control; exercise, recreation and rest; emotional upset and its implications; and psychosexual development and problems. The role of the teacher and parent in encouraging optimal health is emphasized.

***Hea. 160. Problems in School Health Education in Elementary and Secondary Schools (2-6). First and second semesters and summer.**

This is a workshop type course designed particularly for in-service teachers to acquaint them with the best methods of providing good health services, healthful environment and health instruction.

***Hea. 170. The Health Program in the Elementary School (3). First and second semesters and summer. Prerequisites: Hea. 2 and 4 or Hea. 40.**

This course, designed for the elementary school classroom teacher, analyzes biological, sociological, nutritional and other factors which determine the health status and needs of the individual elementary school child. The various aspects of the school program are evaluated in terms of their role in health education. The total school health program is surveyed from the standpoint of organizing and administration, and health appraisal. Emphasis is placed upon modern methods and current materials in health instruction. (The State Department of Education accepts this course for biological science credit.)

***Hea. 178. Fundamentals of Sex Education for Teachers (3). First and second semesters and summer.**

This course presents basic information concerning the physical, psychological and social aspects of sex. Special consideration is given to the adjustment needs and problems of children and youth throughout the school years; and emphasis is placed upon the role that the teacher may play in helping to meet those needs.

***Hea. 180. Measurement in Physical Education and Health (3). First and second semesters and summer. Two lectures and two laboratory periods per week.**

The application of the principles and techniques of educational measurement to the teaching of health and physical education: study of functions and techniques of measurement in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

***Hea. 189. Field Laboratory Projects and Workshop (1-6). First and second semesters and summer.**

A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P. E., Rec., Hea., or Ed. 189 is six.

*Note: Starred courses may be taken for graduate credit with permission of the advisor. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

***Hea. 190. Administration and Supervision of School Health Education (3).** First and second semesters and summer.

The application of the principles of administration and supervision to school health education. The course should be taken during the semester in which the student is doing student teaching.

For Graduates

Hea. 200. Seminar in Physical Education, Recreation and Health (1). First and second semesters and summer.

Hea. 201. Foundations in Physical Education, Recreation and Health (3). First and second semesters and summer.

A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

Hea. 203. Supervisory Techniques in Physical Education, Recreation, and Health (3). First and second semesters and summer.

A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

Hea. 210. Methods and Techniques of Research (3). First and second semesters and summer.

A study of methods and techniques of research used in physical education, recreation and health education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

Hea. 220. Scientific Foundations of Health Education (3). First and second semesters and summer.

A course dealing with an analysis of physical, mental, and social factors which influence the total health status during the developmental process. The role of education in fostering physical and mental health is studied.

Hea. 230. Source Material Survey (3). First and second semesters and summer.

A library survey course, covering the total areas of physical education, recreation and health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

Hea. 240. Advancements in Modern Health (3). First and second semesters and summer.

This course is designed to review the developments in those scientific and medical areas upon which the concepts of modern health education are based.

*Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

Hea. 250. Health Problems in Guidance (3). First and second semesters and summers.

A course designed to familiarize guidance counselors with principles of health and with common deviations from health, especially during the school years. Implications of health for pupil effectiveness in the entire curriculum, including extra-class activities, are dealt with. Special attention is given to psychosomatic disturbances which are commonly an aspect of personal problem situations. Methods of dealing with health problems and utilizing available resources of school and community are discussed.

Hea. 260. Public Health Education (3). First and second semesters and summer.

A course designed to acquaint the student with the structure, functions and major problems in public health; and with the role of education in public health.

Hea. 280. The Scientific Bases of Exercise (3). First and second semesters and summer. Prerequisites, Anatomy, Physiology, P. E. 100, P. E. 160, or the equivalent.

A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

Hea. 287. Advanced Seminar (1-2). First and second semesters and summer. Prerequisites: P. E. 201, Hea. 201, Rec. 201, or Hea. 220, or permission of the instructor.

This course is a study of the current problems and trends in the selected fields of physical education, recreation and health education.

Hea. 288. Special Problems in Physical Education, Recreation, and Health (1-6). First and second semesters and summer.

Master or Doctoral candidates who desire to pursue special research problems under the direction of their advisors may register for 1-6 hours of credit under this number.

Hea. 289. Research—Thesis (1-5). First and second semesters and summer.

Students who desire credit for a Master's thesis, Doctoral dissertation, or a Doctoral project should use this number.

Hea. 290. Administrative Direction of Physical Education, Recreation and Health (3). First and second semesters and summer.

This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

Hea. 291. Curriculum Construction in Physical Education and Health (3). First and second semesters and summer.

A study of the principles underlying curriculum construction in physical education and health education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

D. Physical Therapy

College Park Campus

P. T. 10, 11. Physical Therapy Orientation. (0, 0). One hour per week. First and second semesters.

General introductory course to the professional field of physical therapy. Field trips to physical therapy departments in government and private agencies. Orientation of the student to job opportunities with their specifications and demands; self analysis of the students' capabilities and the major curriculum in light of such specifications and demands.

P. T. 20, 21. Foundations of Physical Therapy (1, 1). One hour per week. First and second semesters.

Introduction to the development, growth and function of physical medicine and rehabilitation with regard to the role of the physical therapist. A study of the national organization and the leaders in the field. Analysis of medical terminology and development of a field vocabulary.

FOR ADVANCED GRADUATES

Baltimore Campus

Anat. 103. Human Anatomy (8½). First and second semester. Prerequisites: Zool. 1, 5, 20. Three lectures and 9 hours laboratory a week.

The student is given an opportunity to develop a basic concept of the morphology of the human body through a correlation of histology, gross anatomy and neuroanatomy. Dissection of the human body including the brain is required.

Path. 105. Pathology (2). First and second semesters. Prerequisite: Anat. 103, Physiol. 101 taken concurrently. Two lectures a week.

This course includes the study of the basic principles of disease and injury with their application to the various systems of the body. Special emphasis is placed on the locomotor system.

Physiol. 101. General Human Physiology (4). First semester. Prerequisites: Zool. 5, 20; Chem. 1, 3. Two lectures and two 2-hour laboratory periods a week.

The lectures cover the general principles of physiological functions including the following areas: heart and circulation, respiration, kidney and body fluids, gastrointestinal tract, endocrines, and reproduction. The laboratory includes experiments with mammals and lower animals as well as observation on the human subject.

Psych. 161. Psychology for the Handicapped (1). First semester. Prerequisite: Psych. 5. One lecture a week.

This course is devoted to the consideration of human relations as applied to the practice of physical therapy. Emphasis is placed on observing, understanding and evaluating the personal and social factors affecting the handicapped.

P. T. 102 (a). Neurophysiology (1)—Second semester. Prerequisite: Physiol. 101. One lecture a week.

A study of the physiology of the central and peripheral nervous system with emphasis on the neuro-muscular apparatus.

P. T. 102 (b). Physiology of Exercise (1)—Second semester. Prerequisite: Physiol. 102. (a) One 2-hour laboratory period a week.

A consideration of the mechanism of muscular contraction and problems concerned with increasing efficiency of movement in motor activities and work.

P. T. 104. Functional Anatomy (2½)—Second semester. Prerequisite: Anat. 103, Physiol. 101, 102 (a). Three lectures and three 2-hour laboratory periods a week.

This course is primarily a consideration of the locomotor activity of the human body. It is designed to include observation and analysis of motion as it occurs in man under normal and pathological conditions.

P. T. 106. Professional Relations, Ethics and Clinical Observation. (1)—First and second semesters. Two 1-hour discussion periods a month.

A consideration of appropriate conduct related to personal and professional relations of the physical therapist.

P. T. 107. Physical Therapy and Technique I—Massage (1½). First semester, first quarter. One ½-hour lecture and one 1½-hours laboratory per week. Second quarter. One ½-hour lecture and 3½ hours laboratory per week.

The theory, physiological effects and techniques of scientific massage as it is used in all aspects of physical therapy are discussed and administered.

P. T. 108. Physical Therapy Theory and Technique II—Thermotherapy and Actinotherapy (1½). Second semester, third quarter. Two hours lecture, three hours laboratory per week.

The basic physics and physiological effects of heat and ultraviolet are discussed. The student practices the therapeutic application of infra-red and ultra-violet lamps, diathermy, microthermy and ultrasonics.

P. T. 110. Principles of Physical Therapy Applied to Medical and Surgical Conditions (1½). Second semester, third quarter. One 1-hour lecture a week. Second semester, fourth quarter. Two 1-hour lectures a week.

This course presents to the students various conditions encountered in patients treated by the physical therapist. Specialists from various fields of medicine and surgery discuss the problems in their practice with emphasis on indications for various treatment procedures.

A. Dermatology

B. Psychiatry

P. T. 151. Therapeutic Exercise (5). First semester, first quarter. Four 1-hour lectures and six hours of laboratory a week. Second quarter. Two 1-hour lectures and ten hours of laboratory a week.

A study of the principles and techniques of therapeutic exercise related to the prevention, correction and alleviation of disease and injury. This course includes manual muscle testing, muscle reeducation, joint measurement, gait training and functional activities.

P. T. 152. Rehabilitation (3). Second semester. Three 1-hour lectures and three 2-hour laboratory periods a week.

This course is designed to study the principles and practices employed in the comprehensive care and treatment program of the physically handicapped. It includes the evaluation of activities of daily living as well as the application and care of supportive devices.

P. T. 153. Physical Therapy Theory and Technique III (4). First semester. (a) **Electrotherapy**—First quarter, three 1-hour lectures and three 1-hour laboratory periods a week. Second quarter, two 2-hour laboratory periods a week.

This course includes lectures, demonstrations and laboratory tests concerning the physical and physiological effects of low frequency, alternating and direct currents. The therapeutic and the diagnostic use of electricity is discussed and practiced.

(b) **Hydrotherapy**—Second quarter, two 2-hour laboratory periods a week.

The physics of water, cold and heat are reviewed. The various techniques of whirlpool, hot and cold applications, showers and underwater exercise in relations to various conditions are practiced and discussed.

(c) **Bandaging**—Second quarter, ten hours laboratory practice.

In this course one learns the principles and practice of bandaging with particular emphasis on bandages for support and conformity.

P. T. 154. Interprofessional and Social Agencies Correlation (1). Second semester. Two 1-hour lectures a week.

Representatives of allied fields and of related social agencies participate in presentation of information and discussion of their specific roles in total patient care.

P. T. 155. Nursing Procedures Related to Physical Therapy (1½). First semester. One hour of lecture and one of laboratory practice a week.

This course serves to acquaint the student with bedside, aseptic and isolation techniques. Laboratory practice includes the application of bandages and splints, the dressing of wounds and methods of handling acutely ill and chronically disabled patients.

P. T. 156. Current Literature (1). Second semester. One recitation period a week.

This course is designed to acquaint the student with professional and scientific literature. It affords experience in presenting reports and in group discussion.

P. T. 157. Administration and Clinical Observation (1). First semester. One ½-hour lecture and one ½-hour laboratory period a week.

The organization and administration of a hospital and of a physical therapy department is presented.

P. T. 158. Clinical Experience (6). Second semester.

During this period the student gains experience practicing physical therapy procedures in a hospital physical therapy department under the careful supervision of qualified physical therapists.

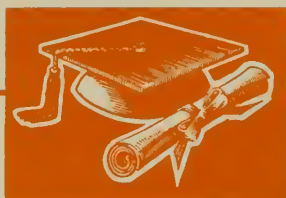
P. T. 160. Principles of Physical Therapy Applied to Medical and Surgical Conditions (4, 2). First and second semesters. Four lectures a week.

These lectures present to the students various conditions encountered in patients treated by the physical therapists. Specialists from various fields of medicine and surgery discuss the problems in their practice which are related to physical therapy with emphasis on indications for various treatment procedures.

- A. Geriatrics
- B. Gynecology and Obstetrics
- C. Medicine
- D. Neurology
- E. Physical Medicine
- F. Public Health
- G. Surgery
- H. Pediatrics
- I. Orthopedics

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SEPARATE CATALOGS

At College Park

Individual catalogs of colleges and schools of the University of Maryland at College Park may be obtained by addressing the Office of University Relations, University of Maryland, College Park, Md.

These catalogs and schools are:

1. General Information
2. College of Agriculture
3. College of Arts and Sciences
4. College of Business and Public Administration
5. College of Education
6. College of Engineering
7. College of Home Economics
8. College of Military Science
9. College of Physical Education, Recreation and Health
10. College of Special and Continuation Studies
11. Summer School
12. Graduate School

At Baltimore

Individual catalogs for the professional schools of the University of Maryland may be obtained by addressing the Deans of the respective schools at the University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland. The professional schools are:

13. School of Dentistry
14. School of Law
15. School of Medicine
16. School of Pharmacy
17. School of Nursing

At Heidelberg

The catalog of the European Program may be obtained by addressing the Dean, College of Special and Continuation Studies, College Park, Maryland.

1957-1958



UNIVERSITY OF MARYLAND

THE COLLEGE OF

**special and
continuation
studies**



IMPORTANT

THE PROVISIONS of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

GENERAL INFORMATION

For information in reference to the University grounds, buildings, equipment, library facilities, requirements in American Civilization, definition of resident and non-resident, regulation of studies, degrees and certificates, transcripts of records, student health and welfare, living arrangements in the dormitories, off-campus housing, meals, University Counseling Service, scholarships and student aid, athletics and recreation, student government, honors and awards, religious denominational clubs, fraternities, societies and special clubs, the University band, student publications, University Post Office and Supply Store; write to the Editor of Publications for the General Information issue of the Catalog.

See Outside Back Cover for List of Other Catalogs

Index on inside back cover.

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BOARD OF REGENTS AND

MARYLAND STATE BOARD OF AGRICULTURE

*Term
Expires*

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B. HERBERT BROWN, Secretary, The Baltimore Institute, 12 West Madison Street, Baltimore 1	1960
HARRY H. NUTTLE, Treasurer, Denton	1957
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THOMAS B. SYMONS, Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	1963
C. EWING TUTTLE, 907 Latrobe Building, Charles and Read Streets, Baltimore 2	1962

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The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

A regular meeting of the Board is held the last Friday in each month, except during the months of July and August.

OFFICERS OF THE ADMINISTRATION

WILSON H. ELKINS, President, University of Maryland.

B.A., University of Texas, 1932; M.A., 1932; B.Litt., Oxford University, 1936; D.Phil., 1936.

ALBIN O. KUHN, Assistant to the President of the University.

B.S., University of Maryland, 1938; M.S., 1939; Ph.D., 1948.

ALVIN E. CORMENY, Assistant to the President, in charge of Endowment and Development.

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

HARRY C. BYRD, President Emeritus, University of Maryland.

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.Sc., Western Maryland College, 1938.

HAROLD F. COTTERMAN, Dean of the Faculty of the University.

B.S., Ohio State University, 1916; M.A. Columbia University, 1917; Ph.D., American University, 1930.

RONALD BAMFORD, Dean of the Graduate School.

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; Ph.D., Columbia University, 1931.

GORDON M. CAIRNS, Dean of Agriculture.

B.S., Cornell University, 1936; M.S., 1938; Ph.D., 1940.

PAUL E. NYSTROM, Director, Agricultural Extension Service.

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

IRVIN C. HAUT, Director, Agricultural Experiment Station and Head, Department of Horticulture.

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.

LEON P. SMITH, Dean of the College of Arts and Sciences.

B.A., Emory University, 1919; M.A., University of Chicago, 1928; Ph.D., 1930; Diplome le l'Institut de Touraine, 1932.

J. FREEMAN PYLE, Dean of the College of Business and Public Administration.

Ph.B., University of Chicago, 1917; M.A., 1918; Ph.D., 1925.

MYRON S. AISENBERG, Dean of the School of Dentistry.

D.D.S., University of Maryland, 1922.

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B.S., University of Minnesota, 1930; M.A., 1936; Ph.D., University of Colorado, 1942.

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B.E., Cooper Union School of Engineering, 1910; C.E., 1913; Registered Professional Engineer.

WILBERT J. HUFF, Director, Engineering Experiment Station and Chairman of the Division of Physical Sciences.

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; Ph.D., Yale University, 1917; D.Sc. (hon.), Ohio Northern University, 1927.

M. MARIE MOUNT, Dean of the College of Home Economics.

B.A., University of Indiana, 1916; M.A., Columbia Teachers College, 1924.

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B.A., Johns Hopkins University, 1914; Ph.D., 1917; LL.B., University of Maryland, 1917.

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B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; Ph.D., (hon.), University of Louisville, 1946.

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M.D., Vanderbilt University Medical School, 1928.

*Resigned January 31, 1957.

EDWARD BARBER, Dean of the College of Military Science.

B.S., Massachusetts Institute of Technology, 1935; M.A., Georgetown University, 1956; Brigadier General, U.S. Air Force.

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Ph.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; Ph.D., 1933.

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B.A., Randolph-Macon College, 1928; M.A., 1937; Ph.D., Peabody College, 1939.

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B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
University, 1937.

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B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

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B.A., University of Maryland, 1930; M.S., 1931.

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B.A., University of Maryland, 1938.

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A.B., University of Maryland, 1930.

GEORGE O. WEBER, Director and Supervising Engineer, Department of Physical Plant.

B.S., University of Maryland, 1933.

GEORGE W. MORRISON, Associate Director and Supervising Engineer Physical Plant. (Baltimore).

B.S., University of Maryland, 1927; E.E., 1931.

C. WILBUR CISSEL, Director of Finance and Business.

B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.

HOWARD ROVELSTAD, Director of Libraries.

B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.

GEORGE W. FOGG, Director of Personnel.

B.A., University of Maryland, 1926; M.A., 1928.

ROBERT J. MCCARTNEY, Director of University Relations.

B.A., University of Massachusetts, 1941.

HARRY A. BISHOP, Director of the Student Health Service.

M.D., University of Maryland, 1912.

ROBERT E. KENDIG, Professor of Air Science and Commandant of Cadets, Air Force R.O.T.C.

A.B., William and Mary College, 1939.

DIVISION CHAIRMEN

CHARLES E. WHITE, Chairman of the Lower Division.

B.S., University of Maryland, 1923; M.S., 1924; Ph.D., 1926.

JOHN E. FABER, JR., Chairman of the Division of Biological Sciences.

B.S. University of Maryland, 1926; M.S., 1927; Ph.D., 1937.

ADOLF E. ZUCKER, Chairman of the Division of Humanities.

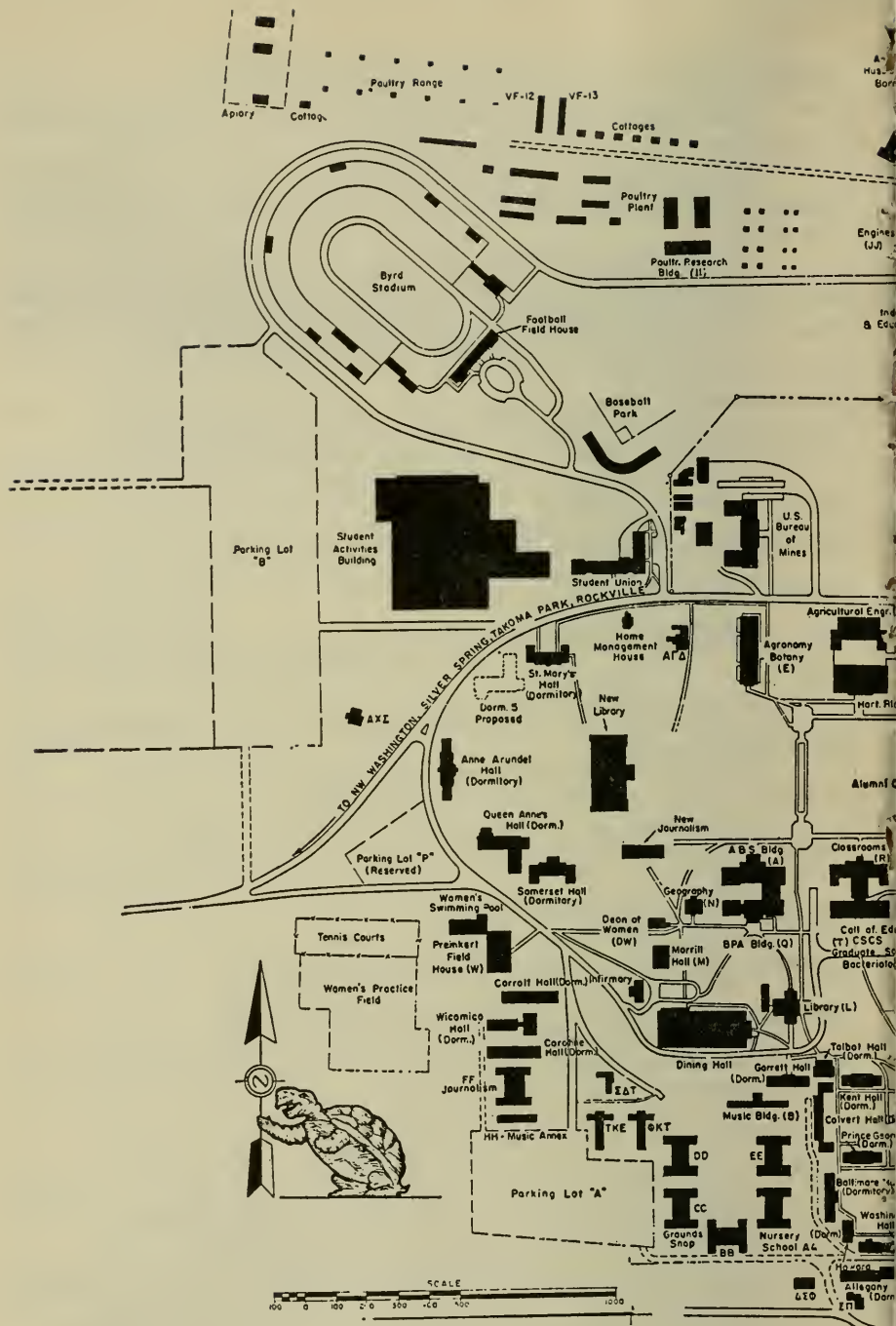
B.A., University of Illinois, 1912; M.A., 1913; Ph.D., University of Pennsylvania, 1917.

HAROLD C. HOFFSOMMER, Chairman of the Division of Social Sciences.

B.S., Northwestern University, 1921; M.A., 1923; Ph.D., Cornell University, 1929.

WILBERT J. HUFF, Chairman of the Division of Physical Sciences.

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; Ph.D., Yale University, 1917; D.Sc. (hon.), Ohio Northern University, 1927.



Map of College Park Campus, 1957. The map shows the layout of the campus, including buildings, parking lots, and roads. Key locations labeled include:

- Surplus Property (State Agency)
- Grounds & Custodial Department
- Chemical Asphalt Engineering Institute
- Wind Tunnel (V)
- Parking Lot "D"
- Information & Police
- Engineering Labs (S)
- Engineering Classroom (J)
- Chemistry (C)
- Mathematics (V)
- Harrison Laboratory Greenhouse & Plant Lab.
- Warehouses
- Service Building
- Ritchie Coliseum (Col)
- Fraternity & Sorority Row
- Fire Service East Bldg.
- Montgomery Hall (Dormitory)
- Lehigh Road
- Washington - Baltimore Expressway
- College Park Campus

The map also includes a circular seal at the top center, commemorating the years 1867, 1856, and 1920.

A	Arts & Sciences-Francis Scott Key Hall
AA	Nursery School
AR	Armory
B	Music
IB	Administration
C	Chemistry
Col	Coliseum
O	Dairy-Turner Laboratory
DD	Aviation Psychology Laboratory
DW	Dean of Women
E	Agronomy - Botany - H. J. Patterson Hall
EE	Counseling Center
F	Horticulture - Holzappel Hall
FF	Journalism
G	Ritchie Gymnasium
GG	Activities Building
H	Home Economics - Margaret Brant Hall
I	Agricultural Engr. - Shriver Laboratory
J	Engr. Classroom Bldg.
K	Zoology - Silvester Hall
L	Library - Shoemaker Building
M	Morrill Hall
N	Geography
O	Agriculture - Symons Hall
P	Industrial Arts & Education - J.M. Patterson Bldg.
Q	Business & Public Administration - Talloterra Hall
R	Classroom Building - Woods Hall
S	Engr. Laboratories
T	Education - Skinner Building
U	Chem. Engr.
V	Wind Tunnel
W	Preinkert Field House
X	Judging Pavilion
Y	Mathematics
Z	Physics
II	Poultry - Jull Hall
JJ	Engineers Research Lab. (Molecular Physics)

Sororities Not Shown
Phi Sigma Sigma
Alpha Chi Omega
Alpha Xi Delta

Fraternities Not Shown
Alpha Epsilon Pi
Zeta Beta Tau
Phi Kappa Gamma
Tau Epsilon Phi

Civil
Defense
Training Bldg.

1957-58 CALENDAR

First Semester

1957

September 17-20	Tuesday-Friday	Registration, first semester
September 23	Monday	Instruction begins
November 27	Wednesday after last class	Thanksgiving recess begins
December 2	Monday, 8 A.M.	Thanksgiving recess ends
December 21	Saturday after last class	Christmas recess begins

1958

January 6	Monday, 8 A.M.	Christmas recess ends
January 20	Monday	Charter Day
January 21	Tuesday	Pre-Examination Study Day
January 22-29	Wednesday-Wednesday, inc.	First Semester examinations

Second Semester

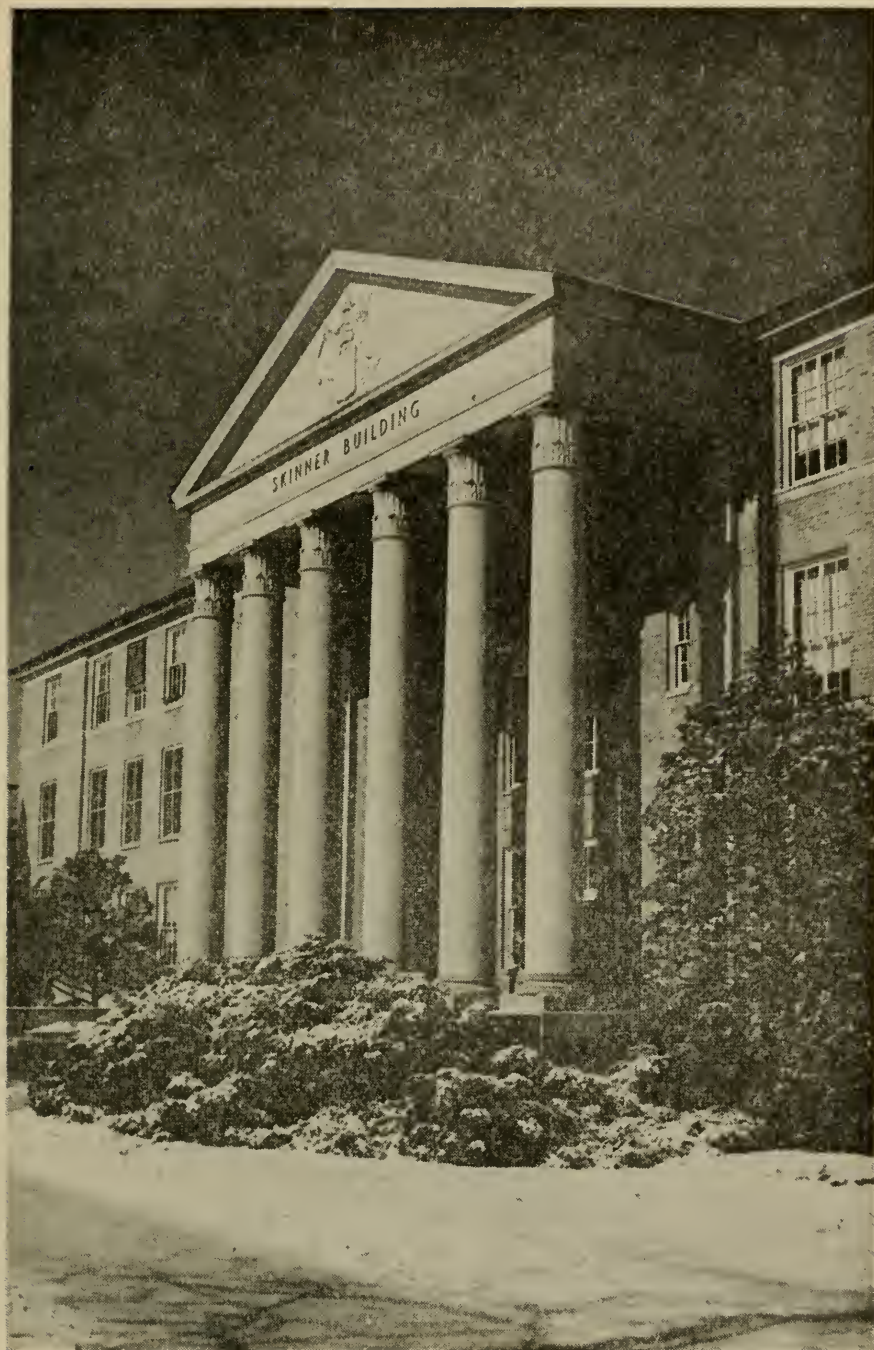
February 4-7	Tuesday-Friday	Registration, second semester
February 10	Monday	Instruction begins
February 22	Saturday	Washington's birthday, holiday
March 25	Tuesday	Maryland Day
April 3	Thursday after last class	Easter recess begins
April 8	Tuesday, 8 A.M.	Easter recess ends
May 15	Thursday	Military Day
May 28	Wednesday	Pre-Examination Study Day
May 29-June 6	Thursday-Friday, inc.	Second Semester examinations
May 30	Friday	Memorial Day, holiday
June 1	Sunday	Baccalaureate exercises
June 7	Saturday	Commencement exercises

Summer Session, 1958

June 23	Monday	Registration, Summer Session
June 24	Tuesday	Summer Session begins
August 1	Friday	Summer Session ends

Short Courses

June 16-21	Monday-Saturday	Rural Women's Short Course
August 4-9	Monday-Saturday	4-H Club Week
September 2-5	Tuesday-Friday	Firemen's Short Course



HEADQUARTERS BUILDING FOR A WORLD-WIDE EDUCATION PROGRAM

The Skinner Building on the College Park campus, in addition to housing the College of Education and several departments, provides office facilities for the CSCS programs throughout the world. Other principal offices are located in Heidelberg, Germany, and Tokyo, Japan.

College of SPECIAL AND CONTINUATION STUDIES ISSUE 1957-1958

ADMINISTRATIVE STAFF

OFF-CAMPUS DIVISION

RAY EHRENSBERGER, *Ph.D.*, *Dean*
STANLEY J. DRAZEK, *Ph.D.*, *Associate Dean*
RALPH J. KLEIN, *Ph.D.*, *Assistant Dean*
RICHARD H. STOTTLER, *M.A.*, *Assistant Dean and Director of Institutes*
GEORGE J. DILLAVOU, *M.A.*, *Assistant to the Dean*
EDWARD F. JAMES, *M.A.*, *Assistant to the Dean*
LEO A. KNIGHTS, *M.S.*, *Bookmobile Librarian*

BALTIMORE DIVISION

EDWARD F. COOPER, *M.A.*, *Director*
MARY K. CARL, *Ph.D.*, *Education Adviser*
FRANCES C. WICKHAM, *B.S.*, *Adviser in Public Health Nursing*

EUROPEAN DIVISION

HERMAN BEUKEMA, *LL.D.*, *Director*
MASON G. DALY, *Ph.D.*, *Associate Director*
ERNEST H. HOFER, *B.Litt.*, (*Oxon.*), *Assistant Director*
DON E. TOTTEN, *M.A.*, *Assistant Director*
JOSEPH E. DELLEN, *Ph.D.*, *Assistant Director for the United Kingdom*
LEWIS E. PERRY, *Ph.D.*, *Resident Dean, Munich Branch*
ERNEST HERBSTER, *B.A.*, *Assistant Comptroller*
ANN R. REED, *B.A.*, *Assistant Director of Admissions*
MARTHA V. SHORT, *B.S.*, *Assistant Registrar*
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*ROBERT A. BAYS, *M.A.*, *Supervisor of Language Courses*
ROSE BEYER, *Dr.Sc.*, *Supervisor of Mathematics Courses*
JOSEPHINE LEO, *B.S.*, *Evaluator, Admissions*

FAR EAST DIVISION

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LYNN B. BENNION, *Ph.D.*, *Associate Director*
THOMAS M. LESCALLEET, *B.S.*, *Assistant Comptroller*
MARGERY O. FRY, *B.S.*, *Assistant Director of Admissions and Registrar*

*Returning to College Park campus, Fall, 1957.

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- ALVIN BODERMAN**, Lecturer in Sociology (Far East).
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- NELSON RANSON BOHN**, Lecturer in Business Organization.
B.S., University of Maryland, 1951.
- ARTHUR P. BOUVIER**, Professor of English (Europe and Far East).
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- JOHN H. BOWEN**, Assistant Professor of Psychology.
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A.B., Louisiana State University, 1940; M.A., University of Iowa, 1942.
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- SIMEON M. BRIGHT**, Lecturer in History.
A.B., West Virginia University, 1949; M.A., 1950.
- ARTHUR BROWN**, Lecturer in Bacteriology.
B.A., Brooklyn College, 1943; M.A., University of Kentucky, 1947; Ph.D., University of Chicago, 1950.
- GLEN D. BROWN**, Professor of Industrial Education.
A.B., Indiana State Teachers College, 1916; M.A., Indiana University, 1931.
- SAMUEL E. BROWN**, Assistant Professor of English (Europe).
A.B., Indiana University, 1934; M.A., 1946; Ph.D., Yale University, 1955.
- RAY B. BROWNE**, Instructor in English.
A.B., University of Alabama, 1943; M.A., Columbia University, 1947; Ph.D., University of California at Los Angeles, 1956.

RUFUS C. BROWNING, Lecturer in Sociology.

A.B., Illinois College, 1940; M.P.S., University of Colorado, 1949; Ph.D., American University, 1955.

WILLIAM FRENCH BRUCE, Lecturer in Education.

B.S., Ohio State University, 1911; M.A., 1924; Ph.D., 1926.

F. ROBERT BRUSH, Assistant Professor of Psychology.

A.B., Princeton University, 1951; M.A., Harvard University, 1953; Ph.D., 1956.

MARIE D. BRYAN, Associate Professor of Education.

B.A., Goucher College, 1923; M.A., University of Maryland, 1945.

FRANK BLAIR BUCHANAN, JR., Lecturer in Military Science.

B.A., Southwest Texas State Teachers College, 1932.

LESLIE R. BUNDGAARD, Asst. Professor of Government and Politics (Europe).

B.S., University of Wisconsin, 1948; M.S., 1949; Ph.D., Georgetown University, 1954.

FRANKLIN L. BURDETTE, Professor of Government and Politics.

A.B., Marshall College, 1934; M.A., University of Nebraska, 1935; M.A., Princeton, 1937, Ph.D., 1938.

FLORENCE M. BURNETT, Lecturer in Nursing Education.

B.S., New York University, 1945; M.A., Columbia University, 1950.

OAKLEIGH R. BUSH, Instructor in English (Europe).

A.B., University of Pittsburgh, 1947; L.M., 1948.

JAMES BYRD, Instructor of Speech and Dramatic Arts.

B.A., University of North Carolina, 1948; M.A., 1949.

RICHARD H. BYRNE, Associate Professor of Education.

A.B., Franklin and Marshall College, 1938; M.A., Columbia University, 1947; Ed.D., 1952.

MARY K. CARL, Associate Professor of Education.

B.S., Johns Hopkins University, 1946; Ph.D., University of Maryland, 1951.

WILLIAM D. CARMICHAEL, Lecturer in Economics.

B.A., Yale University, 1950; M.A., Princeton University, 1952; M.P.A., 1952.

JOHN ALCOTT CARPENTER, Lecturer in History.

A.B., Harvard University, 1942; M. A., Columbia University, 1947; Ph.D., 1954.

EUGENE F. CARRAHER, Lecturer in History (Far East).

A.B., Clark University, 1948; M.A., University of Connecticut, 1950.

VERNE E. CHATELAIN, Professor of History.

B.A., Nebraska State Teachers College, 1917; M.A., University of Chicago, 1925; Ph.D., University of Minnesota, 1943.

CHARLES B. CLARK, Lecturer in History.

A.B., Washington College, 1934; A.M., Duke University, 1936; Ph.D., University of North Carolina, 1941.

ELI W. CLEMENS, Professor of Business Organization.

B.S., Virginia Polytechnic Institute, 1930; M.S., University of Illinois, 1934; Ph.D., University of Wisconsin, 1940.

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- VIRGINIA CAROLYN CONLEY**, Associate Professor of Nursing Education.
B.S., University of Maryland, 1940; M.A., 1953.
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- JOHN L. COULTER, JR.**, Assistant Professor of English.
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- C. GREGORY CRAMPTON**, Professor of History (Europe).
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- MARGARET T. CUSSLER**, Instructor in Sociology.
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LL.B., George Washington University, 1921.

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- CLARA G. STRATEMEYER**, Lecturer in Education.
B.S., Teachers College, Columbia University, 1928; M.A., 1929; Ph.D., Columbia University, 1936.
- WARREN L. STRAUSBAUGH**, Associate Professor and Head of Speech.
B.S., Wooster College, 1932; M.A., University of Iowa, 1935.
- JOHN M. STREET**, Lecturer in Geography (Far East).
B.A., University of California at Berkeley, 1948.
- ROLAND N. STROMBERG**, Assistant Professor of History.
A.B., University of Kansas City, 1939; M.A., American University, 1946; Ph.D., University of Maryland, 1951.
- JOHN B. STRUBLE**, Lecturer in Military Science.
B.A., American University, 1938.
- HERBERT L. SWAN**, Instructor in Speech (Europe).
Ph.B., Brown University, 1928; M.A., University of Redlands, 1949.
- CHARLES T. SWEENEY**, Professor of Accounting.
B.S., Cornell University, 1921; M.B.A., University of Michigan, 1928.
- MATTHEW TAYBACK**, Lecturer in Nursing.
A.B., Harvard University, 1939; A.M., Columbia University, 1940; Ss.D., Johns Hopkins School of Hygiene, 1953.
- TED TAYLOR, JR.**, Instructor in Speech.
B.L.I., Emerson College, 1954.
- ANDERS TEJLER**, Instructor in Sociology.
B.A., University of Kentucky, 1942; M.A., University of Maryland, 1952.
- DORIS E. TERRY**, Instructor in Physical Education.
B.S., Western Kentucky State, 1949; M.S., Indiana University, 1952.

FEODOR THEILHEIMER, Lecturer in Mathematics.

Ph.D., University of Berlin, 1936.

JOHN LESTER TIERNEY, Lecturer in Business and Public Administration.

A.B., University of Minnesota, 1929; L.L.B., University of Wisconsin, 1938; L.L.M., George Washington University, 1956.

RAYMOND THORBERG, Instructor of English.

B.A., University of Alaska, 1939; M.A., University of Chicago, 1946; Ph.D., Cornell University, 1954.

PAUL A. THURSTON, Lecturer in Physics.

B.A., Ohio Wesleyan University, 1942; B.M.E., Ohio State University, 1943; Doctorandus, University of Amsterdam, 1952.

WILLIAM F. TIERNEY, Assistant Professor of Industrial Education.

B.S., Teachers College of Connecticut, 1941; M.A., Ohio State University, 1949; Ed.D., University of Maryland, 1952.

MARTIN T. TODARO, Instructor in Speech.

B.S., University of Texas, 1947; M.A., 1949.

RICHARD ANTONIO TOUPIN, Lecturer in Physics.

B.S., University of South Carolina, 1946; M.S., University of Hawaii, 1949.

HORACE M. TRENT, Lecturer in Electrical Engineering.

B.A., Berea College, 1928; M.A., Indiana University, 1929; Ph.D., 1934.

ELLIOT S. VALENSTEIN, Lecturer in Psychology.

B.S., College of the City of New York, 1949; M.A., University of Kansas, 1953; Ph.D., 1954.

WILHELMUS A. M. VAN EEKEREN, Instructor in Government and Politics.

L.L.B., Amsterdam University, 1951; M.A., University of Oregon, 1952; Ph.D., Georgetown University, 1956.

WILLIAM VAN ROYEN, Professor and Head of Geography.

M.A., Rijksuniversiteit Utrecht, 1925; Ph.D., Clark University, 1928.

NELSON S. VAN VALEN, Lecturer in History (Far East).

B.A., Swarthmore, 1948; M.A., Claremont Graduate School, 1951.

JAMES A. VAN ZWOLL, Professor of Education.

A.B., Calvin College, 1933; M.A., University of Michigan, 1937; Ph.D., 1942.

HAROLD J. VETTER, JR., Assistant Professor of Psychology (Europe).

B.A., University of Buffalo, 1949; M.A., 1952; Ph.D., 1955.

S. M. VINOCOUR, Lecturer in Speech.

B.A., University of Southern California, 1943; M.A., University of Nevada, 1948; Ph.D., Pennsylvania State University, 1953.

WALTER W. WADA, Lecturer in Physics.

B.A., University of Utah, 1943; M.A., University of Michigan, 1946; Ph.D., 1950.

ROBERT S. WALDROP, Lecturer in Psychology.

B.A., University of Oklahoma, 1934; Ph.D., University of Michigan, 1948.

JAMES A. WALKER, Instructor in English.

B.A., Amherst College, 1939; M.A., Harvard University, 1941; Ph.D., 1948.

ROALD K. WANGSNES, Lecturer in Physics.

B.A., University of Minnesota, 1944; Ph.D., Stanford University, 1950.

KATHRYN P. WARD, Associate Professor of English.

A.B., George Washington University, 1935; M.A., 1937; Ph.D., 1946.

JOHN H. WARKENTIN, Instructor in Geography (North Atlantic).

B.S., University of Manitoba, 1949; M.A., University of Toronto, 1954.

HUBERT A. WARNER, Lecturer in Business Administration.

B.S., Pennsylvania State University, 1926.

WILLIAM E. WATERS, JR., Lecturer in Electrical Engineering.

B.S., University of Kentucky, 1947; M.S., 1949.

- J. DONALD WATSON**, Professor of Business Administration.
A.E., Reed College, 1926; M.B.A., University of Michigan, 1931; Ph.D., Northwestern University, 1941.
- LINVILL F. WATSON**, Assistant Professor of Sociology (Europe).
A.B., University of Pennsylvania, 1939; Ph.D., 1953.
- FRED W. WELLBORN**, Professor of History.
B.A., Baker University, 1918; M.A., University of Kansas, 1923; Ph.D., University of Wisconsin, 1926.
- PHIL WELSH**, Instructor in Psychology (Europe).
B.A., Temple University, 1950; M.A., 1951.
- F. JEACHIM WEYL**, Lecturer in Mathematics.
B.A., Swarthmore, 1935; M.A., Princeton University, 1937; Ph.D., 1939.
- PHILIP D. WHEATON**, Instructor in History (Europe).
A.B., Clark University, 1938; M.Ed., 1946; Ph.D., University of Maryland, 1955.
- GERALD EVERETT WHEELER**, Lecturer in History.
A.B., University of California at Berkeley, 1948; M.A., 1949; Ph.D., 1954.
- J. PATRICK WHITE**, Instructor in History.
B.A., University of Michigan, 1949; M.A., 1950; Ph.D., 1956.
- KATHARINE WHITESIDE-TAYLOR**, Lecturer in Education.
B.A., University of Wisconsin, 1919; M.A., Teachers College, Columbia University, 1936; Ed.D., 1938.
- FRANCES C. WICKHAM**, Assistant Professor of Nursing.
B.S., Catholic University of America, 1947.
- GLADYS A. WIGGIN**, Professor of Education.
B.S., University of Minnesota, 1929; M.A., 1939; Ph.D., University of Maryland, 1947.
- RICHARD B. WILSON**, Assistant Professor of Government and Politics (Europe).
B.A., University of California, 1943; M.A., 1948; Ph.D., 1952.
- ROBERT E. WILSON**, Lecturer in Aeronautical Engineering.
B.S., Georgia Institute of Technology, 1941; M.S., 1942; Ph.D., University of Texas, 1952.
- NORMAN MALTBY WOLCOTT**, Lecturer in Physics.
B.A., Harvard University, 1949; M.A., 1950; D.Phil., Oxford University, 1955.
- MAURICE R. WOLFE**, Instructor in Sociology (Europe).
A.B., University of California at Berkeley, 1948; M.A., 1952.
- JOHN WILLIAM WRENCH, JR.**, Lecturer in Mathematics.
B.A., University of Buffalo, 1933; M.A., 1934; Ph.D., Yale University, 1938.
- KENNETT WILLIAM YEAGER**, Lecturer in Sociology.
B.A., University of Pittsburgh, 1938; M.A., 1940; Ph.D., 1949.
- JOHN E. YOUNGER**, Professor and Head of Mechanical Engineering.
B.S., University of California, 1923; M.S., 1924; Ph.D., 1925.
- W. GORDON ZEEVELD**, Professor of English.
A.B., University of Rochester, 1924; M.A., Johns Hopkins University, 1929; Ph.D., 1936.
- ADOLF E. ZUCKER**, Professor and Head of Foreign Languages.
A.B., University of Illinois, 1912; A.M., 1913; Ph.D., University of Pennsylvania, 1917.

COLLEGE OF SPECIAL AND CONTINUATION STUDIES

ADMINISTRATIVE STAFF

OFF-CAMPUS DIVISION

RAY EHRENSBERGER, Ph.D., *Dean **STANLEY J. DRAZEK, Ph.D., *Associate Dean*RALPH J. KLEIN, Ph.D., *Assistant Dean*RICHARD H. STOTTLER, M.A., *Assistant Dean and Director of Institutes*GEORGE J. DILLAVOU, M.A., *Assistant to the Dean*EDWARD F. JAMES, M.A., *Assistant to the Dean*

SECTION I

GENERAL

The primary purposes of the College of Special and Continuation Studies are: (1) to extend the facilities of the University by offering educational programs at conveniently established off-campus centers overseas and throughout the State of Maryland and environs of the District of Columbia; (2) To offer a Bachelor of Arts degree in General Studies to mature adult off-campus students.

History

On the recommendation of the Administrative Board and the President of the University, the Board of Regents established in 1947 the College of Special and Continuation Studies. This College performs two principal functions. First, it is charged with the responsibility of administering all off-campus instruction for adult part-time students. Secondly, it enrolls students pursuing the Bachelor of Arts degree in General Studies.

The scope of activity of this College has been greatly extended since its inception in 1947. The College administers one of the world's largest campuses with operations conducted on four continents. Last year there were in operation more than two hundred different Education Centers in eighteen countries, serving over twenty thousand students. In addition there are over forty conveniently established Centers located throughout the State of Maryland and environs of the District of Columbia, serving more than five thousand adults.

ACADEMIC PROGRAMS

Degree Opportunities

In cooperation with other colleges of the University, the College of Special and Continuation Studies administers off-campus courses which may be applied to the Bachelor of Arts degree in General Studies or to other established undergraduate or graduate degrees. *Students matriculated in other colleges of the University of Maryland on campus may not transfer to the Bachelor of Arts degree curriculum in General Studies and pursue this degree on campus.*

*Office of the Dean: University of Maryland, College Park, Maryland. Telephone, Washington, D.C. Exchange: Warfield 7-3800, extensions 425, 434, 541.

Further information regarding degree programs are explained in Section III of this catalog.

Associate in Arts or Associate in Science

Students following an adult program with the University of Maryland who have completed the first two years of an established curriculum may be granted a Certificate of Associate in Arts or Associate in Science, whichever is appropriate, providing they have completed 60 semester hours, not including Basic R.O.T.C. and physical activities, and that at least 15 semester hours have been completed in residence at the University of Maryland with an average grade of 2.0. The student must make formal application for the certificate to the Office of the Registrar. The certificate must be recommended by the college in charge of the curriculum, as in the case of degrees.

ADULT EDUCATION PROGRAMS*

The adult education programs offered by the College of Special and Continuation Studies afford students a convenient opportunity to continue their education. Students who have full-time employment or who, for some other reason, cannot follow a full-time program at College Park may pursue degrees off-campus.

Courses at both the graduate and undergraduate level are offered in government agencies, industrial establishments, educational institutions, military establishments, and other centers. All courses offered and instructors assigned to teach them are fully approved by the University department concerned.

CURRICULUM REQUIREMENTS

Requirements for all degrees must be met to the satisfaction of the dean of the college concerned.

ESTABLISHMENT OF OFF-CAMPUS CENTERS

The College is prepared to establish credit courses, institutes, and special programs for groups of adults who are qualified to do university work. If facilities permit and demand is sufficient, courses or institutes may be set up in any community requesting this service.

The ability of the College of Special and Continuation Studies to meet all requests for off-campus courses is limited by three factors: (1) The College prefers to use regular university staff members to teach its courses. Occasionally, staff members are not free for off-campus assignments. (2) Courses can be given only where there are adequate reference library materials, laboratories or other necessary facilities. (3) Another limiting factor is student enrollment. Occasionally a course which has been scheduled must be cancelled if there is insufficient enrollment.

*Adult education is here used to include all those forms of training and learning pursued incidentally during leisure hours by persons otherwise regularly and fully employed.

TYPES OF COURSES AND INSTITUTES

The College of Special and Continuation Studies offered during the 1956-1957 school year approximately 300 courses each semester for credit. Over 100 courses were given in the summer term. These figures do not include the European, North Atlantic and Far East Programs, which offer more than 300 courses during each eight-week term. While credit courses comprise the bulk of off-campus offerings, institutes, certificate programs, and in-service training programs, are also given.

Credit Courses

The College offers credit courses in the social and natural sciences, military science, the humanities, mathematics, engineering, and education. There are limited offerings in the technical areas.

In off-campus centers, such as Baltimore and military establishments, planned sequences of courses are offered. It is not always possible to offer a complete sequence of courses satisfying special curriculums at all centers.

Certificate Programs

Single courses or sequences of courses leading to a certificate may be set up where university credit is not desired.

Institutes and Short Courses

Adults whose primary interest is that of acquiring additional knowledge and skills in specialized fields should call the Director of Institutes.*

Institutes, short courses and educational programs specifically designed to meet the particular needs of a group may be arranged. A partial list of these programs follows:

- Aerodynamics Course—Fairchild Aircraft Division
- Aviation Education Workshop
- Business Communications Institute
- Business Management Institute
- Correctional Administration Institute
- Cosmetology Institute
- Forum on Community Planning for Cerebral Palsy
- Governor's Conference on Juvenile Delinquency
- Hospital Management Institute
- In-Service Highway Engineering Program
- Institute on Careers in Mental Hospitals
- Institute on Chinese-American Cultural Relations
- Institute on Developing the Professional Educator
- Institute on Management Problems of the Small Business Firm
- Law Enforcement Institute
- Maryland Civil Defense Staff College
- Maryland Conference on Aging
- Maryland Education Conference
- Maryland Guidance Conference
- Maryland Training Directors Conference
- Maryland Workshop on Economic Education
- Nursing Home Administration Institute
- Phi Alpha Theta Regional History Conference

*Warfield 7-3800, extension 541.

In-Service Training Programs

A number of in-service training programs involving credit or non-credit courses have been offered in the fields of labor-management, supervisory training, health and welfare, law enforcement, highway engineering, and social service.

Special Programs for Teachers

The staff of the Institute for Child Study of the College of Education offers for teachers a series of courses on human development and on the techniques of child study. The sequence of three courses, Child Development Laboratory I, II, and III, involves the direct year-long study of children as individuals and in groups. It is offered to teachers in the field through this College.

A series of community study courses offered in Baltimore and in several counties supplement the child development work by emphasizing the social environment of the child.

The College of Special and Continuation Studies, in cooperation with the College of Education, offers courses which fulfill the State Department requirements for certification.

ADVANCED STANDING

An official statement of Advanced Standing will be prepared, *upon request*, by the Director of Admissions when the following conditions are fulfilled:

1. Submission of a formal application for admission, including high school record.
2. Submission of official transcripts from all other institutions attended (including official transcripts from military service schools where applicable).
3. Submission of official G.E.D. test reports from USAFI (where applicable).
4. Completion of form D.D. 295 in duplicate (for military personnel).
5. Completion of twelve (12) semester hours of Maryland course work, with a minimum grade average of "C".

An unofficial evaluation will be prepared, *upon request*, as soon as student's file in the office of the Director of Admissions is complete (items 1 through 4 above).

Credit by Correspondence

In adult programs of education at the University of Maryland, credit for correspondence courses from approved institutions is accepted toward certain degrees at the University of Maryland, providing this credit is accepted by the institution conducting the correspondence course as credit toward its own baccalaureate degrees.

Students must consult with their academic dean before enrolling in correspondence courses for transfer of credit to this University.

The amount of such credit by correspondence that can be accepted toward a degree at the University of Maryland may not exceed 12 semester hours.

Credit by Examination, including GED Credits*.

Credit towards the Bachelor's degree may be established by examination under the following conditions:

a. The applicant must have completed at the University of Maryland at least 12 semester credits with a maximum average grade of C before making the application for an examination to establish credit.

b. Usually credit by examination will not be accepted for any of the final 30 semester credits.

c. No more than 20 semester credits can be granted by examination except when a student takes GED credit. Students who establish 24 hours of credit by GED tests are ineligible for further credit by examination. A combination of credit by GED tests and by advanced standing examination may not total more than 24 hours. Non-degree students are not qualified to establish credit by examination.

d. A foreign student may not establish credit by examination in freshman or sophomore courses of his native language.

e. The fee for an advanced standing examination is \$5 per semester-hour credit.

Maximum Service School Credit

Credit earned by means other than regular class attendance in an approved degree-granting institution, excluding basic R.O.T.C. and physical activities and credit by examination including credit for General Educational Development (GED) tests, cannot be applied toward a degree at the University of Maryland in excess of 36 semester hours. This credit embraces credit for military education (Officers Candidate School), credit which might be transferred from service schools recommended by the American Council on Education, and credit earned by correspondence courses from approved institutions. The amount of such credit actually used for a degree at the University of Maryland depends upon the curriculum and college from which adult students elect to graduate.

*The following conditions govern credit granted for the completion of the General Education Development examinations:

Test	Scores	Course Equivalent	Credits
I	65	English 1 & 2	3, 3
II	60	Soc. 1, G & P 1	3, 3
III	61	General Science	6
IV	60	English 3, 4	3, 3

No credit will be given for English 3 and 4 until requirements for English 1 and 2 are satisfied. English 8 or 14 will be required of all those who receive 12 hours of English credit by means of the GED examinations.

STUDENT RESPONSIBILITY IN PLANNING
A PART-TIME PROGRAM

Candidates for Degrees

Students taking credit work in this College will receive their degrees through the degree-granting colleges and the Graduate School. Work to be credited toward an undergraduate or graduate degree should be planned with advisers in colleges granting the degrees. Admission requirements for off-campus degree candidates are the same as for full-time day students at the University. Before registering, a candidate for a degree should be admitted to the University.

Each candidate for a degree must file in the office of the Registrar, eight weeks prior to the date he expects to graduate, a formal application for a degree.

Students earning their degrees in other colleges must transfer from the College of Special and Continuation Studies to their degree-granting college when registering for their last six hours.

Teacher Certification Requirements.

A student intending to qualify as a teacher in any city, county, or state should obtain a statement of certification requirements for that particular area and plan a program accordingly.

Maryland State Department of Education requirements provide that a teacher in service may present for certificate credit not more than *six semester hours of credit completed during a school year*.

Prerequisites

Students taking off-campus courses must have the approval of their advisers in degree-granting colleges to take any course for which prerequisites have not been fulfilled.



OFF-CAMPUS LIBRARY SERVICE

In cooperation with the University of Maryland Library, the College of Special and Continuation Studies operates an off-campus library service. Scheduled bookmobile visits are made to off-campus centers, where students may borrow library materials; and in certain distant class centers collections of course-related books are placed under the supervision of the local library or of the course instructor for the convenience of students.

Overseas, course-related books are sent from base to base with the instructors.



THE UNIVERSITY'S BOOKMOBILE

University of Maryland students line up to obtain books for collateral reading in courses they have enrolled for at an off-campus stateside center.

SECTION II

UNIVERSITY REGULATIONS REGARDING ADMISSION,
REGISTRATION, FEES, WITHDRAWALS, AND GRADES

CREDIT COURSES

Regular Admission

The admission requirements for part-time students who desire to become candidates for degrees are the same as for full-time students at the University. Before registering, a candidate for a degree must be admitted to the University. All students desiring to enroll in any of the degree-granting colleges must apply to the Director of Admissions of the University of Maryland at College Park or Baltimore depending on the location of the office at which they are registering for course work.

In selecting students more emphasis will be placed upon good grades and other indications of probable success in college rather than upon a fixed pattern of subject matter. In general, 4 units of English and 1 unit each of social and natural sciences are required. One unit each of algebra and plane geometry is desirable. While foreign language is desirable for certain programs, no foreign language is required for entrance. Fine arts, trade and vocational subjects are acceptable as electives.

For a more detailed statement of admissions, write the Editor of Publications for a copy of the "General Information" issue of the catalog.

Those who seek graduate degrees should apply to the Dean of the Graduate School, College Park.

Provisional Admission

Students who are not sure that they wish to matriculate for degrees may be admitted to the University on a provisional basis.

Classification of Students

Regular Students. Students who prior to their registration for work in the College of Special and Continuation Studies have been admitted to degree-granting colleges will be considered as students in good standing subject to academic regulations of the University. Students who desire to matriculate for a degree must be high school graduates or must present a high school equivalence certificate.

Students matriculated in other colleges of the University of Maryland on-campus may not transfer to the Bachelor of Arts degree curriculum in General Studies and pursue this degree on campus.

Special Students. Applicants who are at least twenty-one years of age, and who do not meet the regular entrance requirements, may be admitted to such

courses as they seem fitted to take. *Special students are ineligible to matriculate for a degree until entrance requirements have been satisfied.*

Other categories of special students are: (a) those who wish to transfer their University of Maryland credits to another institution, or (b) take University of Maryland courses for self-improvement. These students may pursue any courses for which they have met the prerequisites.

Students who wish to take courses for transfer of credit to other institutions are advised to consult the institution from which they plan to receive their degrees.

Guidance

The student who wishes to pursue work toward a degree in a program administered by the College of Special and Continuation Studies must secure guidance and permission to take off-campus courses from an adviser in the college in which he wishes to obtain his degree.

Degrees

Credit courses taken under these conditions through the College of Special and Continuation Studies may be counted toward any of the degrees granted by the colleges of the University.

Quality of Credit Courses

Both instructors and courses in the College of Special and Continuation Studies are approved by appropriate department heads and deans and meet the same academic standards as courses and faculty on campus. Courses carry residence credit identical to that given for regular campus courses. Classes meet for sixteen weeks, making a total of 48 class hours for three-credit courses and 32 class hours for two-credit courses.

Course Load

Six semester hours is considered a full load for off-campus fully employed, part-time students. For exceptional adult students, up to nine semester hours may be approved providing the student's academic average for previous college work be not less than a 2.5 Honor Point Rating. (This means a grade average midway between a C and a B.) In case laboratory is involved no more than seven semester hours may be approved. On-campus part-time students taking courses through this College are governed by the same rules.

FEES

Credit Courses

Matriculation Fee	\$10.00
(Payable once at time of first registration by all students, full-time and part-time; candidates for degrees and non-candidates. Only one matriculation fee need be paid for each degree.)	
For Undergraduates	\$10.00
For Graduates	\$10.00
Tuition Charge per credit hour	\$10.00
a. Students enrolled for a full-time campus program must pay \$10.00 per credit hour for courses taken off-campus in addition to regular campus fees.	
b. Maximum tuition charge per term for Graduate Students, \$100.00.	

LABORATORY AND OTHER FEES

Laboratory Fees Per Semester Course

Agricultural Engineering	\$3.00	Horticulture	5.00
Bacteriology .....\$10.00 and	20.00	Industrial Education	
Botany .....\$5.00 and	10.00		\$5.00 and 7.50
Business Administration	7.50	Journalism .....\$3.00 and	6.00
Statistics	3.50	Mechanical Engineering	3.00
Chemical Engineering	8.00	Music (applied music only) ..	40.00
Chemistry	10.00	Physical Activities Courses..	3.00
Education (Depending on		Physics—	
Laboratory) \$1.00, \$2.00		Lecture Demonstration ...	2.00
\$3.00,	5.00	Introductory	3.00
Practice Teaching	30.00	All other	10.00
Dairy	3.00	Psychology	4.00
Electrical Engineering	4.00	Office Techniques and Man-	
Entomology	3.00	agement	7.50
Home Economics—		Speech—	
(Non-Home Ec. Students)		Radio and Stagecraft	2.00
Practical Art, Crafts,		All other	1.00
Textiles and Clothing ...	3.00	Zoology	8.00
Foods and Home Manage-			
ment (each)	7.00		

The above laboratory fees will be charged whenever the availability of personnel, facilities, and other factors make it possible to offer laboratory instruction. If equipment other than that belonging to the University of Maryland is used, laboratory fees may not be charged, depending upon the arrangements that can be made with the cooperating party.

Miscellaneous Fees and Charges

Late Registration Fee

All students are expected to complete registration, including the filing of class cards and payment of bills, on the regular registration days. Those who do not complete registration during the prescribed days will be charged a fee of..... \$ 5.00

Fee for Change in Registration (Substitution of one course for another, or increase in semester hour registration)*..... 3.00

Special Examination Fee—to establish college credit—per semester hour 5.00

Makeup Examination Fee

For students who are absent during any class period when tests or examinations are given..... 1.00

Transcript of Record Fee

No charge is made for first copy

Each additional copy 1.00

*This fee is not charged to part-time students who drop a course and do not substitute in its place another course carrying the same number of credit hours.

Property Damage Charge—Students will be charged for damage to property or equipment. Where responsibility for the damage can be fixed the individual student will be billed for it; where responsibility cannot be fixed, the cost of repairing the damage or replacing equipment will be pro-rated.

Library charges:

For failure to return books to general library on or before due date	per day	.05
For failure to return books to bookmobile on or before due date	per week	.25
Satisfactory restitution must be made for lost or mutilated books.		

Diploma and Graduation Fees

Diploma Fee for Bachelor's degree.....	10.00
Diploma Fee for Master's Degree.....	10.00
Graduation Fee for Doctor's Degree.....	50.00
Foreign Language Examination (first examination without charge) ..	5.00

All fees, except Diploma Fee and Graduation Fee, are payable at the time of registration for each semester.

Diploma Fee and Graduation Fee must be paid prior to graduation.

Payment of Fees

All checks, money orders, or postal notes should be made payable to the University of Maryland.

SHORT COURSES AND INSTITUTES

Fees for short courses and institutes will be determined in terms of cost of each such short course or institute.

WITHDRAWAL AND REFUND OF FEES

Any student compelled to leave the University at any time during the academic year must file, in person or by letter, a *request for withdrawal*. The Dean of the College of Special and Continuation Studies will initiate and sign the necessary withdrawal forms and forward them to the office of the Registrar. If this is not done, the student will not be entitled to a certificate of honorable dismissal, and will forfeit his right to any refund to which he would otherwise be entitled. The date used in computing refunds is the date the application for withdrawal is filed in the office of the Dean of the College of Special and Continuation Studies, College Park or Baltimore, depending upon the office where the student enrolled.

Students withdrawing from the University will receive a refund of all charges, less the matriculation fee, in accordance with the following schedule:

Period from Date Instruction Begins—16 Week Semester.

2 weeks or less.....	80%
between 2 and 3 weeks.....	60%
between 3 and 4 weeks.....	40%
between 4 and 5 weeks.....	20%
over 5 weeks.....	0

Period from Date Instruction Begins—8-Week Term or Less

First week	60%
Second week	20%
Over two weeks	0

When regularly enrolled part-time students for off-campus instruction officially drop a course or courses and continue with one or more courses, they may receive a refund of 80% for the dropped courses if they are officially dropped prior to the third meeting of the class or classes.

GRADES

Marking System: The following symbols are used for marks: A, B, C, and D, Passing; F, Failure; I, Incomplete; W, Withdrawal; X, unofficial withdrawal in emergency circumstances, carries no prejudice, and cannot later be changed in the case of an Incomplete.

An average grade of "C" is required for the bachelor's degree.

**PLANNING THE SEMESTER'S COURSES**

Mr. George Bowman, assistant education advisor at the Pentagon, recommends Maryland courses to prospective students. The Pentagon Program includes over 65 courses in numerous fields. Personal counselling is given both by representatives of the University as well as by educational advisors in military centers, without whose cooperation the CSCS Program would not be possible.

SECTION III

CURRICULA

Any curriculum of the University may be followed by the student enrolled in the College of Special and Continuation Studies. It is not always possible to offer the key courses in many of these curricula, however, for two principal reasons: (1) some courses require laboratories which cannot be established at all centers; (2) the number of students desiring a specialized course of study at a given center may not be large enough to justify its being given.

The University *requires that the last 30 semester hours be completed in residence* for a baccalaureate degree. Credit earned in the College of Special and Continuation Studies is residence credit. In case of hardships upon an adult student, the thirty-hour rule may be adjusted. An adult (or veteran) student who has an average of 2.50 may petition to take six of the last thirty hours required for a degree at some other institution of recognized high standing.

The curricula most frequently desired by off-campus students are offered in the following Colleges of the University: (1) College of Special and Continuation Studies, (2) Arts and Sciences, (3) Business and Public Administration, (4) Education, (5) Military Science, and (6) the Graduate School.

Requirements Common to All Curricula

Most curricula require 16 semester hours in Physical Education and R.O.T.C. in the freshman and sophomore years. These requirements are waived for adult, off-campus students.

All students are required to complete the University Program in American Civilization which is described in the General Information Catalog.

Students who are able to avail themselves of classification tests administered by the University of Maryland may exercise certain options for English 1, 2, Sociology 1, Government and Politics 1, and History 5 and 6, which courses are a part of the American Civilization Program. However, the classification tests do not reduce the 24 semester hours required by the American Civilization Program.

COLLEGE OF SPECIAL AND CONTINUATION STUDIES

Telephone, Washington, D. C. Exchange:

Warfield 7-3800, Extension 425, 434, 541

The College of Special and Continuation Studies offers the Bachelor of Arts degree in General Studies. This degree program is designed to meet the educational needs of mature off-campus students and provides optimum latitude in program planning to meet individual needs.

The Bachelor of Arts degree in General Studies provides opportunity for programs in the area of the social sciences, with concentrations of study in such fields as: economics, history, government and politics, sociology, geography, psychology, and commerce. In special cases, and with permission of the dean, the student may elect concentrations in other areas.

The Bachelor of Arts degree in General Studies is administered in co-operation with the various academic deans and department heads. *Students matriculated in other colleges of the University of Maryland on campus may not transfer to the Bachelor of Arts degree curriculum in General Studies.*

Program for the Bachelor of Arts Degree in General Studies

Freshman and Sophomore Years

English 1, 2 and 3, 4 or 5, 6	12	semester	hours
Math. or Science	6	"	"
Foreign Language*	12	"	"
Government and Politics 1	3	"	"
Sociology 1	3	"	"
History 5, 6	6	"	"
Speech 103, 104	6	"	"
Electives	12	"	"

Total 60 " "

Junior and Senior Years

Primary Concentration from One Department			
100 Level Courses	15	"	"
Secondary Concentration from One or More			
Departments—100 Level Courses	21	"	"
Other Electives	24	"	"

Total 60 " "

SUMMARY OF DEGREE REGULATIONS

The Bachelor of Arts degree in General Studies requires 120 semester hours of academic work for graduation.

All applicants for this degree must meet the same admission requirements as those applying for other undergraduate degrees at the University of Maryland.

During the third and fourth year, a student will elect a primary and secondary area of concentration. These areas would include the Department of Economics, History, Government and Politics, Sociology, Geography, Psychology and Commerce. In special cases, and with the permission of the Dean, the student may elect a primary concentration in other areas.

- a. **Primary Area**—A student must elect 15 hours of 100 level courses in a single department listed above.
- b. **Secondary Area**—A student must elect 21 hours of 100 level courses in one or more of the above listed departments or in departments that are related.

*Students desiring an area concentration in Commerce may substitute Geography 1, 2, or 20, 21, and Economics 31, 32, for the language requirement.

- c. A student must pursue work in related fields. Only a systematic program of courses will be approved. The Dean or the student's advisor will assist the student in mapping a program that involves a coherent concentration of work within a general framework of study.
- d. It is recommended that the 24 hours of elective credit in the junior and senior years include as many 100 level courses as possible.

Credit by Examination and GED Credit

College level General Educational Development (GED) credit will be awarded up to 24 semester hours to military personnel as governed by the University regulations and as explained in Section I of this catalog. Those persons who receive 12 semester hours of credit for English by satisfactorily passing GED tests I and IV will be required to validate this credit by completing English 8 or English 14. This English credit will be applied toward electives.

Civilians, who have special competencies, and who are unable to establish credit through the GED examinations may petition to establish by special examination a maximum of 20 semester hours. Regulations governing these examinations are explained in Section I of this catalog.

Advanced Standing

The maximum combined credit allowed toward this degree for GED examination credit, correspondence credit and service school credit shall not exceed 36 semester hours.

Correspondence Credit

A maximum of 12 semester hours of correspondence work will be accepted toward this degree from approved institutions, providing this credit is accepted by the institution conducting the correspondence course as credit toward its own baccalaureate degrees.

Service School Credit

Military Service School credit will be considered up to 12 semester hours. Basic ROTC, Advanced ROTC, Officer Candidate School Courses and Physical activities credits **WILL NOT** be included in the maximum 12 hours allowed for Military Service Credit. Only recognized Service School credits will be accepted, and must be validated by official transcript.

Graduate Study

It must be emphasized that in order to do graduate work, a student must elect enough 100 level courses within a single department to qualify for advanced work. The usual number required for entrance is 24 hours. Sufficient electives are available to enable a student to meet this requirement. Furthermore, the student is advised that the quality of work is of more importance than a specific number of courses.

Students desiring to pursue graduate studies should consult the Graduate School requirements in the area of their choice and plan their program accordingly.

COLLEGE OF ARTS AND SCIENCES

Telephone, Washington, D. C. Exchange:

WARfield 7-3800, Extension 287

Degrees in the College of Arts and Sciences are based primarily upon major and minor concentrations rather than upon curricula. The student must meet the conditions set for both major and minor (or required supporting courses) by the department in charge of his major work. These requirements vary from one department to another. In general, they include a full year's work in the major subject (30 to 40 semester hours) and a half year's work in the minor or in supporting courses (18 semester hours). The major department has authority over both the major and the minor. A general college requirement is that the student must have a "C" average in his major and a "C" average in his major and minor combined unless the major department sets a higher requirement.

Major work uniformly must be done in one department, as in history, sociology, or government and politics. Minor work need not be restricted to one department, provided the head of the major department approves of the individual courses taken. For example, a history major may take, as a part of his 18 semester hours of minor work, courses in such subjects as sociology, government and politics, psychology, and economics. The minor, however, must consist of a coherent group of courses, and the head of the major department must approve such a divided minor. Of the 18 semester hours required in the minor, at least six must be in one department in courses numbered 100 or above. The safest procedure, for the adult off-campus student, who is denied the privilege of registering each semester with the direct approval of the head of his major department, is to concentrate his minor work in one department. Thus, the major in history may take his 18 semester hours of minor work in sociology, or government and politics, or other comparable departments.

In accordance with University regulations, a student must acquire a minimum of 56 semester hours of academic work with an average grade of "C" or better before he will be permitted to take courses numbered 100 or above in his major or minor. A student who has established a "B" average in work done at this University may take courses numbered 100 or above after the completion of 48 semester hours of academic work. The student should be careful to avoid taking courses for which he does not have the prescribed prerequisites.

Before a student selects a major or minor, he should consult the head of the major department at College Park. It is this person alone, or his designated representative, who can give the candidate for the Arts and Sciences degree approval on major and minor requirements. Department heads are willing to answer by mail or telephone any inquiries from adult off-campus students majoring with their departments.

Majors offered in the College of Arts and Sciences are as follows:

- | | |
|---------------------------|-----------------------------|
| 1. American Civilization | 11. Geography |
| 2. Art | 12. Government and Politics |
| 3. Bacteriology | 13. History |
| 4. Botany | 14. Mathematics |
| 5. Chemistry | 15. Philosophy |
| 6. Classical Languages | 16. Physics |
| 7. Comparative Literature | 17. Psychology |
| 8. Economics | 18. Sociology |
| 9. English | 19. Speech |
| 10. Foreign Languages | 20. Zoology |

Two considerations must be emphasized in connection with this listing of majors. In the first place, many science courses cannot be given at off-campus centers where laboratory facilities are not available. And, in the second place, courses in specialized subjects cannot be offered at a given center if there is not a sufficiently large body of students to support them. For this latter reason, especially, it is not always practicable for a student to complete all degree requirements in specialized subjects off-campus. The Arts and Sciences majors which have been shown by experience to be most nearly attainable at off-campus centers are history, government and politics, and sociology.

It must be noted that no course generally required in the University may be counted toward a major or minor in the College of Arts and Sciences. Thus, the courses Government and Politics 1, Sociology 1, History 5 and 6, and the first two years of English may not be counted toward majors and minors. The twelve semester hours required in a foreign language and the twelve semester hours required in mathematics or science may not be counted toward the major or minor.

College Requirements:

1. Foreign Language—Twelve semester hours in one language, unless otherwise specified.

2. Natural Science and Mathematics—Twelve semester hours, unless otherwise specified. The science courses elected require the approval of the dean; they will usually be from those departments offering majors in the College of Arts and Sciences. At least one course must include laboratory experience and one course must be elected in each of the divisions of Biological and Physical Sciences except in the case of students whose science courses are specifically prescribed in their curricula.

3. Speech—Two to four semester hours in accordance with the particular curriculum.

4. Major and Minor Requirements—When a student has completed satisfactorily the requirements of the freshman and sophomore years he will select a major in one of the departments of an upper division and for graduation will complete a departmental major and a minor. The courses constituting the major and the minor must conform to the requirements of the department in which the major work is done.

The student must have an average of not less than C in the introductory courses in the field in which he intends to major.

A major shall consist, in addition to the underclass departmental requirements, of 24-40 hours, of which at least twelve must be in courses numbered 100 or above.

A minor, in programs leading to the A.B. degree, shall consist of a coherent group of courses totalling 18 semester hours in addition to the requirements listed above. At least six of the 18 hours must be in a single department in courses numbered 100 or above. The courses comprising the minor must be chosen with the approval of the major department.

No minor is required in programs leading to the B.S. degree, but the student must take such supporting courses in science or other fields as are required by his major department.

The average grade of the work taken in the major field must be at least C; some departments will count toward satisfaction of the major requirement no course completed with a grade of less than C. The average grade of the work taken in the major and minor fields combined must be at least C. A general average of C in courses taken at the University of Maryland is required for graduation.

History Major

1. Every major in History is required to complete a minimum of 24 semester hours in advanced courses (courses numbered 100 or above), with the following exceptions: (a) the total may be reduced by 3 credit hours for those students who, in addition to the prerequisites, have taken 6 credits in other history courses under the 100 level; and (b) the total may be reduced by 6 credit hours for those who, in addition to the prerequisites, have completed 12 semester hours in history courses under the 100 level.

2. No less than 15 nor more than 18 semester hours of the 24 in advanced courses should be taken in any one field of history, *e. g.*, European, American, or Latin American.

3. Prerequisites for majors in History are History 5 and 6 (required of all students) and History 1 and 2.

4. All majors are required to take the proseminar (History 199) during their senior year. History 199, the proseminar, may be waived in hardship cases where the off-campus student cannot come to the campus or is unable to take this course at his off-campus center.

5. No grades of "D" in the major field will be counted toward completing the major requirements. An average grade of "C" must be maintained in the courses selected for a minor.

Sociology Major

1. Every major in Sociology is required to take 27 hours in Sociology exclusive of Sociology 1.

2. Required courses for Sociology majors are the following:

Sociology 2, Principles of Sociology

Sociology 183, Social Statistics

Sociology 186, Sociological Theory

Sociology 196, Senior Seminar

Sociology 196, the Senior Seminar, may be waived in hardship cases, where the off-campus student cannot come to the campus or is unable to take the course at his off-campus center.

3. No grades of "D" in the major field will be counted toward completing the major requirements.

Government and Politics Major

In addition to the regular University requirements, a student majoring in the field of Government and Politics must meet the following conditions:

1. Government and Politics 1, American Government, or its equivalent, is prerequisite to all the other courses offered by the Department. All persons majoring in Government and Politics must first complete this course with a grade of "C" or better.

2. All majors must take 33 hours of Government and Politics, exclusive of Government and Politics 1.

3. No grades of "D" in the major field will be counted toward completing the major requirements.

4. A student's program must include at least one course in each of five of the six following fields: (1) foreign and international, (2) local government, (3) public administration, (4) public law, (5) public policy and (6) political theory. Information as to the classification of Government and Politics courses in the fields may be obtained by application to a major adviser.

American Civilization Major

The program in American Civilization embraces a combined major-minor plan. The Committee in charge of the program consists of the heads of the departments of English, History, Government and Politics, and Sociology. Members of the committee serve as official advisers to students electing to work in the field. The principal objectives of the work for majors are cultural rather than professional.

In choosing a curriculum, students are required to concentrate in one of the four departments primarily concerned with the program. A student following this curriculum must elect at least 18 hours of work at the 100 level in at least two of the departments represented in this program. Elective courses are, with the aid of an official adviser, chosen from courses offered in the humanities, in the social sciences, or in education. Normally, most elective courses are in history, English, foreign languages, comparative literature, economics, sociology, government and politics, and philosophy; but it is possible for a student to fulfill the requirements of the program and to elect as many as thirty semester hours in such subjects as art and psychology, provided that such work fits into a carefully planned program.

In his senior year, each major is required to take a conference course of six semester hours in which the study of American civilization is brought to a focus. During this course, the student analyzes eight or ten important books which reveal fundamental patterns in American life and thought and receives incidental training in bibliographical matters, in formulating problems for special investigation, and in group discussion.

Emphasis History

A student following this curriculum must elect at least 18 hours of work at the 100 level in at least two of the four departments represented in the program.

This curriculum is in some ways ideal for the off-campus student, in that it enables the student to move toward a degree with a minimum of semester hours in one department. There are, however, two principal obstacles to its usefulness to the off-campus student. First, not all courses offered by the departments mentioned above are applicable to this program. For example, the departmental adviser might not approve a course in medieval history for this program. A planned program for the individual student necessitates full agreement with advisers in one of the four departments directing the program. It is necessary for the student to understand fully what courses will fit into his program. Secondly, it may prove difficult, at a given center, to arrange for the conference course of six semester hours required in the senior year. If, however, a large enough group of students desire the course at a given time, it can be arranged.

Students interested in this program should consult with the Executive Secretary of the American Civilization Curriculum, Professor Carl Bode, Department of English, University of Maryland, College Park, Maryland.

Philosophy

The department's undergraduate courses are designed to help students attain philosophical perspective, clear understanding, and sound critical evaluation concerning the nature of man, his place in the universe, and the significance of the principal types of human experiences and activities. Students planning to major in Philosophy should consult the chairman of the department about preparation for the major.

Other Majors

Other majors in the College of Arts and Sciences are available as mentioned above. None of them are closed to adult off-campus students except in practical terms of (1) the difficulties in offering laboratory courses, and (2) an adequate number of students to support them at a given center during a given term. The work in history, government and politics, and sociology are emphasized above only because experience with off-campus offerings has shown them to be most nearly feasible as off-campus majors.

COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

Telephone, Washington, D. C.

Exchange: Warfield 7-3800, Extension 346

The College of Business and Public Administration is fully accredited by the American Association of Collegiate Schools of Business. The College comprises seven departments:

- I. Department of Business Organization and Administration
 1. Accounting and Statistics
 2. Financial Administration
 3. Industrial Administration
 4. Insurance and Real Estate
 5. Marketing Administration
 - (a) Advertising
 - (b) Foreign Trade and International Finance
 - (c) Retail Store Management
 - (d) Sales Management
6. Personnel Administration
7. Transportation Administration
 - (a) Airline and Airport Management
 - (b) Traffic Management
8. Public Administration
- II. Department of Economics
- III. Department of Foreign Service and International Relations
- IV. Department of Geography
- V. Department of Government and Politics
- VI. Department of Journalism and Public Relations
- VII. Department of Office Techniques and Management
 1. Office Management
 2. Office Techniques

For the details of curricula, the student should consult the catalog of the College of Business and Public Administration. Most important, in addition to the regular university requirements, are the following:

1. Most curricula require the following courses:

B.A. 10 and 11	Organization and Control
B.A. 20 and 21	Principles of Accounting
Econ. 4 and 5	Economic Developments
Econ. 31 and 32	Principles of Economics
G. & P. 1	American Government
H. 5 and 6	History of American Civilization
Math. 5	General Mathematics
Math. 6	Mathematics of Finance
Soc. 1	Sociology of American Life

2. A student must acquire a minimum of 56 semester hours of academic work with an average grade of "C" or better before he will be permitted to take courses numbered 100 or above. A student who has established a "B" average in work done at this University may take courses numbered 100 or above after the completion of 48 semester hours of academic work, providing he has the necessary prerequisites.

3. The curricula in Business Administration are specialized, as the above list indicates. As in the cases of some other curricula and Arts and Sciences majors it is not always possible to complete these curricula at off-campus centers operated by the College of Special and Continuation Studies. Any course in any curriculum may be given, however, if an adequate number of students desire it at a given time and center.



BOOTSTRAPPERS, JANUARY 1957

These are the students who completed on-campus in College Park the courses they took elsewhere toward a degree of Bachelor of Science in Military Science. First row (l. to r.) Sgt. Joe Ripley, Capt. James W. Ryan, Colonel Howard McGillin, Capt. Lester Mounic, Capt. Gilbert F. Gonzales, Capt. Abe Thompson, Major Robert F. Edwards, Capt. John K. Aikin. Second row—Major Roy Gudith, Capt. James J. Samalik, M/Sgt. John R. Blackhall, CWO Royal Yates, Lt. Colonel Maxwell Flapan, Capt. Jack K. Lewis, Capt. James M. Myers, CWO Charles H. McMillan. Third row—Major Irving I. Farber, Capt. Ingvar A. Wallace, Capt. William K. Burnett, Capt. Robert S. Montgomery, Colonel Leslie A. Smith, Major Robert C. Hutchinson, Capt. Frederick Collington, Major Flourenz L. Giannarelli. Fourth row—Capt. Robert E. Trapp, Capt. George R. Lynn, Capt. Charles D. Block, Capt. Ray L. Wood, Capt. Joseph F. Brittain, Capt. James M. Stribling, Capt. Aubrey S. Gaskins, Lt. Thomas G. Fields. Fifth row—Major John C. Newman, Capt. Arthur R. Blackwelder, Colonel Henry C. Simmons, 1st Lt. James F. Stakem, Capt. Walker Murray, Capt. Guido J. DeGenaro, CWO James S. Clarke. Sixth row—Major William T. Brunson, Major George W. Mosall, Capt. Harold F. Henry, Major John H. Bailey, Major William Hafer.

COLLEGE OF EDUCATION

Telephone, Washington, D. C.

Exchange: WARfield 7-3800, Extension 234

The College of Education offers curricula for students of Education and for teachers in service. Undergraduate education curricula and advisers are as follows:

1. Academic Education
English—Marie D. Bryan
Foreign Languages—Fein D. Schneider
Mathematics—Orval L. Uly
Natural Sciences—Orval L. Uly
Social Sciences—Robert G. Risinger
Speech—Warren L. Strausbaugh
2. Agricultural Education (under the College of Agriculture)—Arthur M. Ahalt
3. Art Education—Vienna Curtiss
4. Business Education—Arthur S. Patrick
5. Elementary Education—Alvin W. Schindler, Marie Denecke, Glen O. Blough, Leo W. O'Neill, Wesley J. Matson
6. Home Economics Education—Mabel Spencer
7. Industrial Education—R. Lee Hornbake, Glen D. Brown
8. Music Education—Mary A. Kemble
9. Nursery School—Kindergarten Education—Margaret A. Stant
10. Physical Education (Men)—Albert W. Woods
11. Physical Education (Women)—Dorothy Mohr

Areas in which graduate work is offered include adult education, business education, educational administration and supervision, curriculum and teaching, elementary education, guidance, higher education, history, philosophy, and comparative education, home economics education, human development, industrial arts, music education, Secondary education, and vocational-industrial education. Specific curriculum requirements may be obtained from the College of Education catalog.

Only a few of the curricula are described below. The College of Education and Graduate School Catalog should be consulted for full descriptions and requirements of all curricula listed above.

Off-campus Courses in Education

The College of Special and Continuation Studies offers courses in education for in-service teachers to permit them to complete a part of the work required for a bachelor's degree, to enable graduate students to work toward advanced degrees, and to fulfill or renew the Maryland State Department of Education certification requirements. Education courses are offered most

frequently at the Baltimore Center and at centers at the seats of the various counties in Maryland.

Elementary Education Curriculum for Undergraduate Teachers

This curriculum is for teachers who have completed a two- or three-year curriculum in a teachers college. It is also for teachers who have two or more years of successful teaching experience which can be used in lieu of student teaching to meet certification requirements.

This curriculum, leading to the Bachelor of Science degree in elementary education, requires a total of 128 semester credits. The last 30 credits earned before the conferring of the degree must be taken with the University of Maryland.

Industrial Education

Three curricula are administered by the Industrial Education Department: (1) Industrial Arts Education, (2) Vocational-Industrial Education, and (3) Education for Industry.

The Industrial Arts Education curriculum prepares people to teach industrial arts at the secondary level. It is a four-year professional program leading to a Bachelor of Science degree.

The Vocational-Industrial curriculum may lead either to certification as a vocational-industrial teacher, with no degree involved, or to a Bachelor of Science degree including certification. The University of Maryland is designated as the institution which shall offer the "Trade and Industrial" certification courses and hence the courses which are offered are those required for certification in Maryland. The Vocational-Industrial curriculum requires trade competence as specified by the *Maryland State Plan for Vocational Education*. A person who aspires to take the certification courses should review the State plan and he may well contact Maryland State Department of Education officials. If the person has in mind teaching in a designated city or county, he should discuss his plans with the vocational-industrial official of that city or county inasmuch as there are variations in employment and training procedures.

The Education for Industry curriculum is a four-year program leading to a Bachelor of Science degree. The purpose of the program is to prepare persons for jobs within industry and, as such, it embraces four major areas of competence, (a) technical competence, (b) human relations and leadership competence, (c) communications competence, and (d) social and civic competence. The student who is enrolled in this curriculum is required to obtain work in industry in accordance with the plan described in the course, Industrial Education 124, a.b. Consult course descriptions in the back section of this catalog.

COLLEGE OF
PHYSICAL EDUCATION, RECREATION, AND HEALTH

Telephone, Washington, D. C.

Exchange. WARfield 7-3800, Extension 252

The degree of Bachelor of Science is conferred upon students who have met the conditions of their curricula as herein prescribed by the College of Physical Education, Recreation, and Health.

Certain curricula in the College of Physical Education, Recreation, and Health, such as Recreational Leadership and Physical Therapy, are not planned to meet state certification requirements.

Each candidate for a degree must file in the Office of the Registrar eight weeks prior to the date of graduation, a formal application for a degree.

COLLEGE OF MILITARY SCIENCE

Telephone, Washington, D. C.

Exchange: WARfield 7-3800, Extension 261

The College of Military Science offers courses of study designed primarily for armed services personnel or those desiring to follow military careers. Its curricula are given below. These curricula are pursued usually at centers maintained at military installations.

CURRICULA

Two curricula are offered by the College of Military Science—The Military Affairs Curriculum and the Curriculum in Military Science. These curricula lead to the degree of Bachelor of Science, providing the student maintains a grade average of not less than "C". The requirement for Junior standing is attained in these curricula when the student has completed 72 hours with a grade average of not less than "C".

The primary purpose of the Military Affairs Curriculum is to offer to those interested students a broad education in subjects pertinent to military and public affairs, with emphasis on government and politics, history and military science.

The primary purpose of the curriculum in Military Science is to educate men who desire to follow a military career. As a prerequisite for completion of this curriculum, a student must have satisfactorily held or presently hold a commission in one of the Armed Forces, or possess those physical and mental requirements which can lead to a commission in one of the Armed Forces. The completion of the Advanced Air Force R.O.T.C. courses also satisfies this requirement.

The first two years of these curricula are common.

GRADUATE STUDIES

A student wishing to pursue graduate studies upon the completion of the Bachelor of Science degree from this college should plan to use the electives in his curriculum as a major in some one of the departments open to him, such as history, government and politics, sociology, economics, and the like. This major must be arranged under the advisement of the head of the department concerned and the Dean of the College of Military Science.

Common Freshman and Sophomore Years

	Semester	
	I	II
<i>Freshman Year</i>		
*Eng. 1, 2—Composition and Reading in American Literature....	3	3
*Soc. 1—Sociology of American Life .....	....	3
*G. & P. 1—American Government	3	....
**Speech 1, 2—Public Speaking	2	2
Math. 10, 11—Algebra, Trigonometry, Analytic Geometry.....	3	3
or		
Math. 5, 6—General Mathematics, Mathematics of Finance.....	3	3
Modern Language	3	3
†A. S. 1, 2—Basic Air Force R. O. T. C.	3	3
†Physical Activities	1	1
Total	18	18

Sophomore Year

*Eng. 3, 4, or 5, 6—Composition and Reading in World Literature	3	3
Hist. 5, 6—History of American Civilization	3	3
**Speech 5, 6—Advanced Public Speaking	2	2
*Physics 1, 2—Elements of Physics	3	3
Modern Language	3	3
†A. S. 3, 4—Basic Air Force R. O. T. C.	3	3
†Physical Activities	1	1
Total	18	18

*Credit by examination may be permitted for these courses upon successful completion of the college level General Educational Development Tests. Students who receive 12 credit hours in English by this means are required to complete English 8 or English 14. The credits earned in either of these courses may be used as electives.

**Adult off-campus students may substitute Speech 103 and 104, Speech Composition and Rhetoric (3, 3) for Speech 1, 2, (2, 2), and Speech 5, 6, (2, 2). In such substitutions, the deficient two hours will be made up in electives.

†Credit allowed for equivalent service in the Armed Forces. Waived for adult off-campus students.

††Credit allowed to those holding Regular, Reserve or National Guard commissions. Students who do not wish to present these subjects for this degree and who have completed acceptable Service Extension Courses at the Officer Candidate level, or its equivalent, may substitute therefore an equivalent number of hours in Government and Politics and History, in courses numbered 100 or above, of which twelve hours must be in one field.

‡Students with Commissioned Officer Service may be relieved of this subject and pursue advanced studies in lieu thereof. Credit is allowed to those students having had one (1) year or more on active duty status as a commissioned officer in the regular reserve or National Guard.

***Military Science Curriculum**

	Semester	
	I	II
<i>Junior Year</i>		
‡Speech 127, 128—Military Speech and Command	2	2
Speech 133—Staff Reports, Briefings and Visual Aids .....	....	3
Econ. 31, 32—Principles of Economics	3	3
Soc. 2—Principles of Sociology	3	....
††A. S. 101, 102—Advanced Air Force R.O.T.C.	3	3
Electives	6	6
Total	17	17
<i>Senior Year</i>		
M.S. 151—Military Logistics .....	....	3
‡M.S. 152—Military Leadership .....	....	3
M.S. 153—Military Policy of the United States	3	....
M.S. 154—Management of the Military Establishment	3	....
One of the following:		
G. & P. 101—International Political Relations	3	....
G. & P. 102—International Law .....		....
G. & P. 106—American Foreign Relations .....		....
G. & P. 154—Problems of World Politics .....		....
G. & P. 197—Comparative Governmental Institutions .....		....
††A.S. 103, 104—Advanced Air Force R.O.T.C.	3	3
Electives	3	6
Total	15	15

Electives must be taken under advisement and in terms of the objectives of this curriculum. Six semester hours of electives must be taken in courses at the "100 level".

The Military Affairs Curriculum*Junior Year*

Speech 133—Staff Reports, Briefing and Visual Aids	3	....
Econ. 31, 32—Principles of Economics	3	3
Soc. 2—Principles of Sociology .....	....	3
G. & P. 101—International Political Relations	3	....
G. & P. 102—International Law .....	....	3
Hist. 127, 128—Diplomatic History of the U. S.	3	3
Electives	6	3
Total	18	15

Senior Year

M.S. 151—Military Logistics .....	....	3
M.S. 153—Military Policy of the U. S.	3	....
G. & P. 106—American Foreign Relations	3	....
G. & P. 154—Problems of World Politics .....	....	3
Hist. 175, 176—Europe in the World Setting of the 20th Century	3	3
Geog. 190—Political Geography .....	....	3
Electives	7	3
Total	16	15

Electives must be taken under advisement and in terms of the objectives of this curriculum.

††† See footnotes on Page 51.

SCHOOL OF NURSING

Telephone, Baltimore, Maryland

Exchange: PLaza 2-1100, Extension 292

or LExington 9-0320, Extension 762

The specific objectives of this program are to bring up to full collegiate level the basic nursing preparation of graduates of three year diploma schools, and to supply the non-professional courses considered desirable as a basis for further cultural and professional education.

Graduate nurses who have completed a three year program in an approved school of nursing, and who have successfully passed the Maryland State Board Examination for Registration of Nurses, or the equivalent and have qualified as registered nurses and meet the admission requirements of the University of Maryland may pursue studies in the School of Nursing leading to the degree of Bachelor of Science in Nursing.

Advance Standing Credit

Advance standing involving a maximum of 45 credits is determined by the applicant's Nursing School record and the results of the Graduate Nurse Qualifying Examination of the National League for Nursing.

REQUIREMENTS

General Requirements

Eng. 1—Composition and American Literature	(3)
Eng. 2—Composition and American Literature	(3)
Eng. 3—Composition and World Literature	(3)
Eng. 4—Composition and World Literature	(3)
or	
Eng. 5—Composition and English Literature	(3)
Eng. 6—Composition and English Literature	(3)
G.&P. 1—American Government	(3)
Soc. 1—Sociology of American Life	(3)
Hist. 5—History of American Civilization	(3)
Hist. 6—History of American Civilization	(3)

Science Requirements

Bact. 1—General Bacteriology	(3 or 4)
Bact. 101—Pathogenic Bacteriology	(3 or 4)
Chem. 1—General Chemistry	(4)
Chem. 3—General Chemistry	(4)
or	
Chem. 11—General Chemistry	(3)
Chem. 13—General Chemistry	(3)

Nursing Requirements

Nurs. 9—Nursing in Child Health	(2)
Nurs. 108—Applied Psychology	(2)
Nurs. 156—Public Health Nursing I	(2)
Nurs. 157—Public Health Nursing II	(4)
Nurs. 153—Public Health	(2)
Nurs. 154—Principles of Management in a Nursing Unit	(2)
Nurs. 158—Biostatistics	(3)
Nurs. 199—Pro-Seminar	(2)
Nurs. 159—Clinical Practicum (Recom. of Advisor)	(2)

Additional Requirements

Hea. 120—Teaching Health	(3)	
Psych. 1—Introduction to Psychology	(3)	
Sp. 1—Public Speaking	}	(2)
Sp. 10—Group Discussion		(2)
or		
Sp. 103—Speech Composition and Rhetoric	(3)	
Ed. 90—Development and Learning	(3)	
P.E. 160—Scientific Aspects of Movement	(3)	
Nut. 114—Nutrition for Health Services	(3)	
Soc. 64—Courtship and Marriage	(3)	

Electives

Electives may be selected after consultation with the advisor in the areas of psychology, sociology, education, and nursing.

A total of 128 semester credits are necessary for the degree, the last 30 semester hours of which must be taken in the University of Maryland.

GRADUATE SCHOOL

Telephone, Washington, D. C.,

Exchange: WARfield 7-3800, Extension 232

Master's and doctor's degrees are given by most of the departments at the University. Graduate programs are administered by the Graduate School in cooperation with the various departments. Students are admitted to the Graduate School only if (1) they hold baccalaureate degrees and (2) their previous work is in quality and extent acceptable to the department in which they desire to work. Normally a "B" average is required.

A student pursuing a graduate program should keep constantly in touch with the graduate adviser of his major department.

It is sometimes difficult to proceed toward graduate degrees at off-campus centers conducted by the College of Special and Continuation Studies. Library and laboratory facilities are not always available at off-campus centers. Many of the departments require that a certain number of courses be completed on the campus. Furthermore, graduate work is highly specialized, and the number of students desiring particular courses at a given time and center is seldom large. If the circumstances are favorable, however, graduate work in some fields can be offered off-campus.

Courses may be taken for graduate work only if the student has been admitted to the Graduate School.

Graduate degrees are awarded at the completion of an individually planned course study. The student must register for each course in full consultation with the departmental adviser concerned. In general, the master's degree is based upon a division of work between a major and a minor. A minimum of half the required courses for this degree must be taken in courses numbered 200 or above. These courses are open only to graduate students. The remaining courses required for the degree may be taken in courses numbered between 100 and 199. These courses are open to juniors and seniors as well as to graduate students. Courses taken for undergraduate credit may not be counted toward graduate degrees. Information regarding the requirements for all advanced degrees may best be obtained from the Graduate School Catalog and by consultation with the head of the department concerned.

The College of Special and Continuation Studies arranges extensive graduate course programs at several centers. The programs in the various counties and at Baltimore frequently include graduate courses in Education. Graduate courses in mathematics and the sciences are offered at the Aberdeen Proving Ground, Bureau of Ships, David Taylor Model Basin, National Bureau of Standards, Naval Ordnance Laboratory, Naval Research Laboratory, and Patuxent (Naval Air Test Center).

Occasionally graduate courses in the social sciences, particularly history, government and politics, and sociology, are offered at other centers.

SECTION IV

CENTERS

The College of Special and Continuation Studies provides educational programs in the counties, in Baltimore, in various Air, Army, Navy, and other governmental agencies, and in industrial establishments.

Classes are offered at centers ranging from Grantsville, approximately 160 miles west of College Park, to Worcester County, which borders on the Atlantic Ocean.

Centers also range from counties bordering on Pennsylvania to Patuxent in Southern Maryland.

During the 1955-1956 school year, programs were offered at the fifty-three stateside centers listed below:

- | | |
|--------------------------|----------------------------------|
| *Aberdeen Proving Ground | *Glen Burnie |
| Andrews Air Force Base | Grantsville |
| *Annapolis | Hagerstown |
| *Baltimore | Hancock |
| *Bel Air | *Holabird (Fort) |
| Bolling Air Force Base | Langley Park |
| Building T-8 | La Plata |
| Bureau of Ships | Maritime Administration |
| Campus (College Park) | *Maryland Penitentiary |
| Cambridge | Montgomery Blair |
| Centreville | Montgomery Hills |
| Chestertown | National Bureau of Standards |
| Crisfield | Naval Ordnance Laboratory |
| Cumberland | Naval Research Laboratory |
| David Taylor Model Basin | Patuxent (Naval Air Test Center) |
| Denton | Pentagon |
| Detrick (Fort) | Prince Frederick |
| District of Columbia, | Princess Anne |
| Recreation Department | *Reisterstown |
| *Dundalk | Rockville |
| Easton | Salisbury |
| *Ellicott City | Silver Spring |
| *Friendship Airport | Suitland |
| Fort McNair | *Towson |
| Fort Meade | University Park |
| Fort Ritchie | Walter Reed (Army Hospital) |
| Frederick | *Westinghouse |

A schedule of courses for each of the centers described is available approximately six weeks prior to the beginning of each semester.

*Courses at these centers are administered through the Baltimore office, Lombard and Greene Streets, Baltimore 1, Maryland.

HUMAN DEVELOPMENT EDUCATION

Human Development laboratory courses are offered in many states throughout the country. These courses are given by the Institute for Child Study and registrations are administered by the College of Special and Continuation Studies.

During the 1956-1957 school year students in the following states enrolled in this program for credit:

Alabama	Florida	Maryland	Pennsylvania
Arkansas	Georgia	New Jersey	South Carolina
California	Kentucky	New York	Virginia
District of Columbia	Louisiana	Ohio	

COUNTY PROGRAMS FOR TEACHERS

The College of Special and Continuation Studies offers courses in nearly every county in Maryland. The specific courses and their locations depend on the requests made by County Superintendents of Education, their Supervisors and Assistants, and teachers. The actual courses presented will depend on local interest and support of specific courses. Experience has shown that at least two months are required to arrange courses at off-campus centers. The courses are normally scheduled concurrently with campus courses. See Section I for further details. For information concerning registration, contact the College of Special and Continuation Studies, or the County Superintendent of Education.

Courses have been offered in the counties indicated below:

Allegany—Cumberland

Anne Arundel—Annapolis, Marley

Baltimore—Dundalk, Reisterstown, Towson, Catonsville

Calvert—Prince Frederick

Caroline—Denton

Charles—La Plata

Dorchester—Cambridge

Frederick—Frederick

Garrett—Grantsville

Harford—Aberdeen and Bel Air

Howard—Ellicott City

Kent—Chestertown

Montgomery—Montgomery Blair High School, Montgomery Hills, Rockville, Silver Spring, Bethesda, Chevy Chase

Prince Georges—College Park, Langley Park Elementary School, Suitland High School, and Bladensburg High School

Queen Annes—Centreville

Somerset—Princess Anne

St. Mary's—Leonardtown

Talbot—Easton

Washington—Hagerstown

Wicomico—Salisbury

Worcester—Snow Hill

Teachers interested in having a program in Education started in their county or community should make their requests known to this college through their county Superintendent of Schools or some other school official.

Child Study

The staff of the Institute for Child Study, College of Education, offers in each county a series of courses on human development and on the techniques of child study for members of the educational profession. The sequences of three courses called Child Development Laboratory I, II, and III involve the direct year-long study of children as individuals and in groups and are offered to teachers in the field. Teachers should contact their county Superintendent of Schools for offerings in their community. Graduate courses in Human Development are also available in a few of the counties.

Community Study

During the past year, three separate courses in community study Ed. 163, 164, 165 were offered at six locations in Baltimore and Montgomery counties. These courses dealt with the study of local community problems and their influence upon the child, the school, and the home.

The complexity of this program prohibits its being offered in a number of centers. Teachers interested in this program should direct their inquiries to the Dean of this college.

ABERDEEN PROVING GROUND

Courses offered at the Aberdeen Proving Ground are planned to meet the educational needs of military and civilian personnel of the Aberdeen-Edgewood area. During the past year, courses in business administration, economics, English, history, languages, government and politics, mathematics, military science, psychology and speech were offered. A regular sequence of courses is arranged to permit Army personnel to pursue degrees in Military Science.

The Army Information and Education Office at the Proving Ground assists the University in planning this program.

Civilians may enroll if they can secure special passes from the military post concerned.

Further information regarding this program may be obtained from Mr. Simeon Bright, Education Officer and Adviser, telephone: Aberdeen 1000, Extension 27185, or the Baltimore office of CSCS, PLaza 2-1100, Extension 292, 293.

ANDREWS AIR FORCE BASE

During the 1951 spring semester an educational program was initiated at Andrews Air Force Base. The education office at Andrews, with the cooperation of this College, plans the program for Andrews several months in advance of each semester.

The past semester's offerings included courses in business administration, economics, English, foreign languages, government and politics, history, mathematics, military science, psychology, sociology, and speech. Officers and airmen enroll in the various courses to pursue military science and other degrees.

The Andrews educational program complements that of Bolling Air Force Base. Personnel may enroll at either installation or they may enroll concurrently at both.

Further information may be obtained from Mr. Murphy Mears, Director of Education, REDwood 5-8900, Extension 4222, or this College.

BALTIMORE

EDWARD F. COOPER, M.A., *Director, Baltimore Office**

MARY K. CARL, Ph.D., *Educational Advisor*

An office of the College of Special and Continuation Studies is maintained in the Administration Building, University of Maryland, Baltimore, at Lombard and Greene Streets, to serve as headquarters for the largest center of the College. This office also administers the programs in the environs of Baltimore.

During the academic year 1955-1956, over fifteen hundred students from Baltimore City and surrounding counties were enrolled in some 100 different courses. Students are currently working on degrees in several undergraduate colleges and in the Graduate School of the University.

Scope of Offerings

The plan of the Baltimore Office each semester is to offer courses in the various natural and physical sciences, business administration, economics, education, government and politics, geography, history, industrial education, languages, philosophy, psychology, sociology, speech and English that may be applied toward meeting the requirements of the various undergraduate and graduate degree programs of the University.

Institutes and short courses upon request may be provided to meet the specialized educational needs of vocational and avocational groups.

Service to Business, Industrial and Professional Groups

In addition to the regular academic offerings listed above, this office provides consultant service opportunities for specialized institutes, short courses,

*Telephone: PLaza 2-1100, Extension 292, 293, Evenings: PLaza 2-8355.

certificate programs, and in-service training programs that are specifically designed to meet the educational needs of business, industrial and professional groups.

Education

The College of Education supports a steadily expanding offering for teachers and school officials in Baltimore City and in surrounding counties.

Courses are offered which teachers may apply toward bachelor's degrees and master's degrees in education and/or to meet certification requirements.

Those teachers planning to enroll in courses for the purpose of meeting certification requirements are advised to consult with the State Department of Education and/or their local school supervisor.

Students pursuing degree programs are advised to consult with their faculty advisor.

Child Study

The staff of the Institute for Child Study, College of Education, offers each year a series of courses on Human Development, and on the techniques of child study for members of the educational profession. The sequences of three courses called Child Development Laboratory I, II, and III, which involve the direct year-long study of children as individuals and in groups, are offered to teachers in the field. Teachers should contact their Boards of Education for offerings in their community. Graduate courses in Human Development are also available through cooperation of the Institute.

Community Study

With the cooperation of the Departments of Education of the City of Baltimore, and Baltimore County, a series of community study courses are offered to supplement the child development work by presenting the social environment of the Child. University courses dealing with city and community organization and structure are regularly scheduled to enrich the community study program.

Nursing

The School of Nursing, through the College of Special and Continuation Studies, offers a program for graduate nurses leading toward a Bachelor of Science degree in Nursing.

For further information, nurses should contact the Director of Graduate Nurse Studies, College of Special and Continuation Studies, University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland.

Industrial Education

Courses conducted in the Baltimore Center by the Industrial Education Department are selected from the total offerings which constitute the three

curriculum administered by the Department; namely, the Industrial Arts curriculum, the Education for Industry curriculum and the Vocational-Industrial teacher certification curriculum. Courses required for Vocational-Industrial teacher certification are arranged in a two-year cycle so that these persons may obtain the necessary course work within two years.

BOLLING AIR FORCE BASE

An extensive educational program is offered at the Bolling Air Force Base each semester and during each summer session. The education office at Bolling, with the cooperation of this College, plans each program several months in advance.

The past year's offerings included courses in business administration, economics, education, English, foreign languages, government and politics, history, mathematics, military science, psychology, sociology and speech. Officers and airmen enroll in the various courses to pursue military science and other degrees.

The Bolling educational program complements that of the Andrews Air Force Base. Personnel may enroll at either installation or they may enroll concurrently at both.

Further information may be obtained from Mrs. Lois Roberts, Education Services Officer, JOHNSON 2-9000, extension 679 and 348, or this College.

BUREAU OF SHIPS, DEPARTMENT OF THE NAVY

18th and Constitution Ave., N. W., Washington, D. C.

The educational program at the Bureau of Ships is designed to aid Navy engineers and scientists to work toward degrees in engineering, physics, and mathematics. This program is offered in cooperation with the training divisions in the Navy bureaus and this College.

During the past year, advanced courses were offered in mechanical engineering and mathematics.

Further information may be obtained from Mrs. Edna K. Trudeau, Training Officer, Room 2431 Main Navy, LIBERTY 5-6700, extension 66936, or this College.

FORT DETRICK—FREDERICK, MARYLAND

The educational program at Fort Detrick is planned to advance the technical knowledge of the personnel employed at this post. This program is planned by the Detrick Education Office and this College.

During the past year courses were offered in agronomy, bacteriology, business administration, chemistry, chemical engineering, English and mathematics.

Further information relative to this program may be obtained from Miss Veronica Catlett, Project Officer, Frederick, MONUMENT 3-4111, extension 5147, or this College.

DAVID TAYLOR MODEL BASIN—NAVY DEPARTMENT**Carderock, Maryland**

A program of graduate study in fluid mechanics, aeronautical engineering, mechanical engineering, physics and mathematics is offered at the David Taylor Model Basin, under the sponsorship of the Glenn L. Martin College of Engineering and Aeronautical Sciences of the University of Maryland.

Courses in aeronautical engineering, mathematics, mechanical engineering and physics, were offered during the past year. These courses were intended to review mathematical methods and physical principles.

Further details about this program may be obtained from Mr. W. H. Struhs, Head of Training and Safety Branch, OLiver 4-2600, extension 394, or this College.

FORT GEORGE G. MEADE—HEADQUARTERS SECOND ARMY

Courses offered at Fort Meade are designed to meet the educational needs of military and civilian personnel at this post. A regular sequence of courses is arranged for each semester to permit Army personnel to pursue the Military Science degrees.

During the past year courses in English, geography, foreign languages, government and politics, history, mathematics, military science, psychology and speech were offered.

Further information may be obtained from Mr. David C. Berry, Director of Education, Army Education Center, ORchard 4-3311, extension 2575, or this College.

FORT HOLABIRD

Courses offered at Fort Holabird are planned to meet the educational needs of the military and civilian personnel at this installation. A sequence of courses is arranged to permit Army personnel to pursue the Military Science degrees.

During the past year courses were offered in government and politics, mathematics, military science, foreign languages, and speech. Since Fort Holabird is located a short distance from Baltimore many of the military and civilian personnel find it desirable to enroll concurrently in Baltimore and Holabird courses. This arrangement permits a wider selection of courses.

Further information may be obtained from Mr. Gustaf Berglund, Education Adviser, Fort Holabird, MEDford 3-9000, extension 2110, or the Baltimore office of this College, PLaza 2-1100, extension 292, 293.

FORT RITCHIE—CASCADE, MARYLAND

Courses offered at Fort Ritchie are designed to meet the educational needs of military and civilian personnel located at this post.

During the past year courses in English, history and speech were offered.

Further information may be obtained by writing to Major James W. Boring, Education Officer, Fort Ritchie, Cascade, Maryland, or telephoning Highfield 360, extension 41103, or this College.

NATIONAL BUREAU OF STANDARDS

Connecticut Avenue at Upton Street N. W., Washington 25, D. C.

Courses at the National Bureau of Standards are offered under the direction of the Bureau's Educational Committee and this College. The program includes graduate and undergraduate courses.

During the past year the educational program at the National Bureau of Standards included courses in chemistry, electrical engineering, mathematics, mechanical engineering and physics. An announcement of courses for each year is available from the Registrar at the National Bureau of Standards.

Further information concerning this program may be obtained from Mr. Joseph Hilsenrath, member of the Educational Committee, or Mrs. L. L. Chapin, Registrar, EMerson 2-4040, extension 366, The Manse, or this College.

NAVAL ORDNANCE LABORATORY

White Oak, Silver Spring, Maryland

The center at the Naval Ordnance Laboratory is set up for Navy Department personnel in the Washington area. For the most part, courses at this center are of graduate level.

In addition to its regular program, special courses are offered from time to time in support of new projects. A number of courses are arranged at the College Park campus evenings and Saturdays to amplify the NOL program.

During the past year, advanced courses were offered in aeronautical engineering, electrical engineering, mathematics, mechanical engineering, and physics. A printed brochure is available which explains the NOL program.

Additional information may be obtained from Mr. D. E. Starnes, Chief, Training Division, or Mr. Robert C. Donahue, Education and Training Specialist, HENlock 4-7100, extension 411, NOL, or this College.

NAVAL RESEARCH LABORATORY

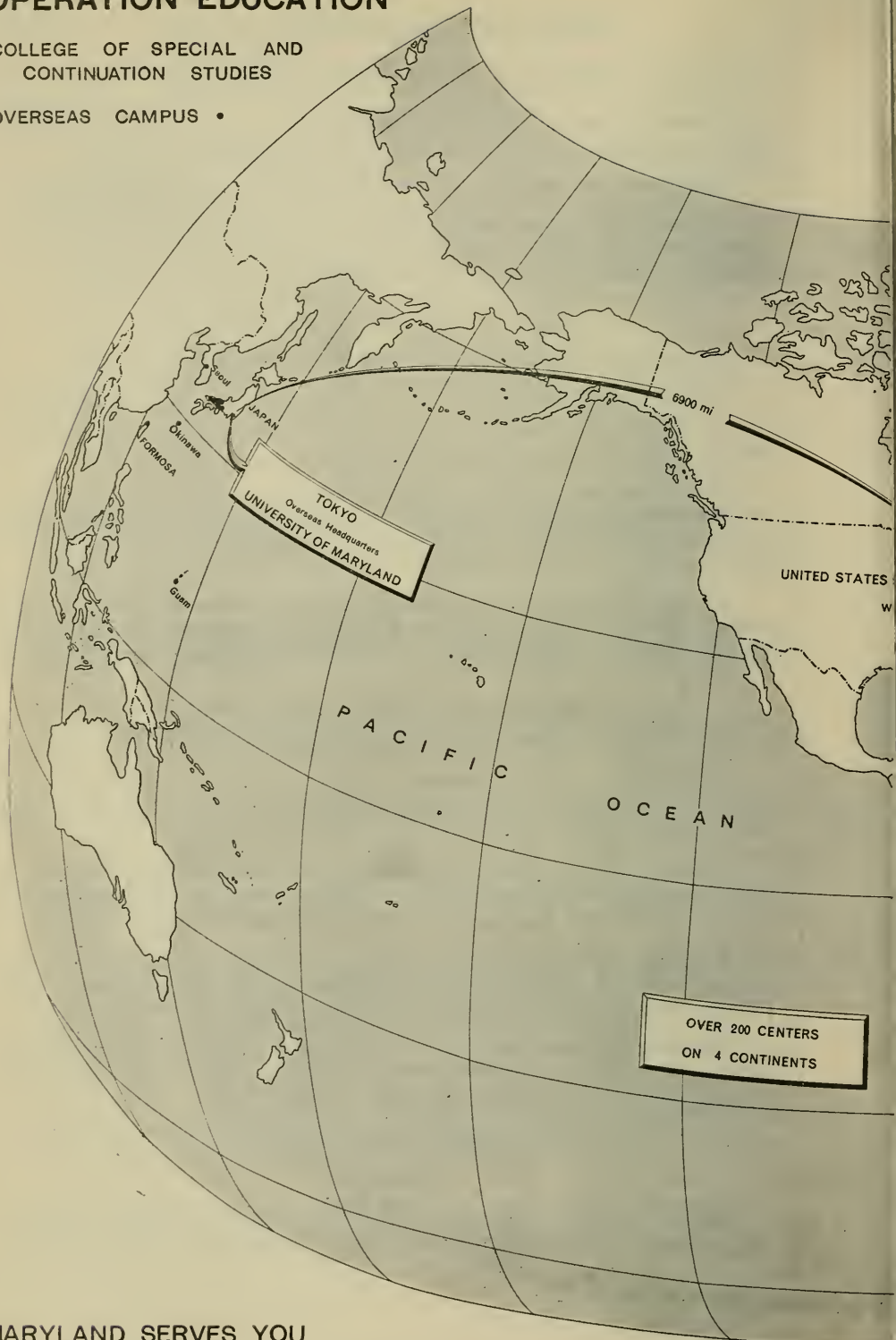
Anacostia

Courses under this program are designed primarily for Navy scientists doing graduate study in the fields of chemistry, engineering, mathematics, and

OPERATION EDUCATION

COLLEGE OF SPECIAL AND
CONTINUATION STUDIES

OVERSEAS CAMPUS •



MARYLAND SERVES YOU

UNIVERSITY OF MARYLAND

IN COOPERATION WITH

ARMED FORCES EDUCATION PROGRAM



WHILE YOU SERVE

physics and are given in cooperation with the Science Education Section of the Naval Research Laboratory. A printed brochure is available at the Naval Research Laboratory which explains the program.

During the past year the Naval Research Laboratory program included advanced courses in electrical engineering, mathematics, mechanical engineering, metallurgy and physics.

Further information concerning this program may be obtained from Mr. John Harms, Assistant Personnel Officer or Mrs. Betty Menick, Johnson 3-6600, extension 856, or this College.

PATUXENT RIVER—UNITED STATES NAVAL AIR STATION

The Patuxent program is aimed primarily at meeting the graduate needs of personnel interested in electrical, mechanical, and aeronautical engineering.

During the past year, advanced courses were offered in chemical engineering, electrical engineering, mathematics, and mechanical engineering.

Further information concerning this program may be obtained from Mr. Harry Ocker, Personnel Director, Industrial Relations Division, Patuxent River, or Dr. H. R. Reed, Professor of Electrical Engineering, College Park campus, or this College.

THE PENTAGON

The Pentagon program, sponsored by the Military District of Washington's University Center, is operated in cooperation with the Army, Air Force, Navy, and Marine Corps, and includes both military and civilian personnel in the Washington area. Well in advance of program planning, the respective services conduct polls to determine the educational needs of military personnel.

The educational offering at the Pentagon represents the world's largest off-campus university program for military personnel currently in operation. During the past year courses were offered in business administration, economics, English, foreign languages, geography, government and politics, history, journalism, mathematics, military science, philosophy, psychology, sociology, and speech. The majority of the students at the Pentagon are primarily interested in courses leading to the BA degree in General Studies and the B.S. degrees in Military Science. Others are working toward degrees in various colleges. An increasing number of students are pursuing graduate degrees.

Further information concerning this program may be obtained during the day from Miss Dorothy Martin and Mr. George Bowman at the Pentagon, room 3C147, University Center, LIberty 5-6700, extension 78015 or 72823. Information may also be obtained from Colonel B. J. Brown, Assistant Chief of Staff, by calling LIberty 5-6700, extension 86213. Air Force personnel may obtain information from Mrs. Lois Roberts, Education Director, Pentagon, Room 5D476, LIberty 5-6700, extension 77074, 71863, or this College.

WALTER REED ARMY MEDICAL CENTER

Washington 12, D. C.

Courses are given at the Army Medical Center in cooperation with the Troop Information and Education Office at the post. Course offerings are planned to meet the needs of Army and Air Force personnel interested in working for Military Science degrees and nurses interested in meeting requirements for a professional degree.

Courses in English, foreign languages, government and politics, history, mathematics, military science, psychology, sociology and speech have been offered during the past year.

Further information regarding the Walter Reed program may be obtained from Mr. Robert E. Hynes, Education Adviser, RAndolph 3-1000, extension 3670, or this College.



REGISTRATION AT THE PENTAGON

Over one thousand military and Department of Defense employees register each semester in the University of Maryland College of Special and Continuation Studies' program. Depicted above is part of the line of registrants for Pentagon courses.

COLLEGE OF SPECIAL AND CONTINUATION STUDIES

OVERSEAS DIVISION

RAY EHRENSBERGER, Ph.D., Dean

STANLEY J. DRAZEK, Ph.D., Associate Dean

RALPH J. KLEIN, Ph.D., Assistant Dean

RICHARD H. STOTTLER, M.A., Assistant Dean and Director of Institutes

GEORGE J. DILLAVOU, M.A., Assistant to the Dean

EDWARD F. JAMES, M.A., Assistant to the Dean

Administrative Staff European Division

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JOSEPH E. DELLEN, Ph.D., Assistant Director for the United Kingdom

LEWIS E. PERRY, Ph.D., Resident Dean, Munich Branch

ERNEST HERBSTER, B.A., Assistant Comptroller

ANN R. REED, B.A., Assistant Director of Admissions

MARTHA V. SHORT, B.S., Assistant Registrar

THADDEUS C. LOCKARD, M.A., Supervisor of Language Courses

*ROBERT A. BAYS, M.A., Supervisor of Language Courses

ROSE BEYER, Dr. Sc., Supervisor of Mathematics Courses

JOSEPHINE LEO, B.S., Evaluator, Admissions

GRACE MARKEN, B.S.C., Adm. Ass't., Logistics

CLINTON P. SCHROEDER, Adm. Ass't., Books and Supplies

EUROPEAN DIVISION

History

The success of the course work offered by the University of Maryland at the Pentagon since 1947 encouraged high officials in the Army and in the Air Force to propose the establishment of similar operations in Europe (with other institutions undertaking like assignments in other areas; notably, the University of California in the Pacific and Louisiana State University in the Caribbean).

Exploratory studies revealed the need and indicated the probable benefits of such a program. Classes began on October 31, 1949, at six of the Armed Forces Education Centers selected for the initiation of the program: Berlin, Frankfurt, Heidelberg, Munich, Nurnberg, and Wiesbaden. The Administrative Offices were opened in Heidelberg in April, 1950.

The fact that 1,851 students registered for the first term was interpreted as an expression of appreciation for the co-operative efforts of the Armed Forces and the University in bringing college-level instruction to where the men were located. In successive terms the program has been expanded and decentralized, so that over ten thousand students were served during the past academic year.

*Returning to College Park campus, Fall, 1957.

The Program is operated on an accelerated basis, with classes meeting two evenings each week for eight weeks. There are five terms each year. The terms are as follows:

September—November
 November—January
 February—March
 April—May
 June—July

The Heidelberg Office has more autonomy than do the various state-side centers. It maintains an assistant comptroller, an assistant registrar, and an assistant director of admissions.

Courses Offered

The courses of study arranged for the European Program point primarily to the Bachelor of Science degree in Military Science and the Bachelor of Arts degree in General Studies. Courses are taught in business administration, economics, English, foreign languages, geography, government and politics, history, mathematics, military science, psychology, sociology, and speech.

Teaching Personnel

A faculty of 300 to 400 full and part-time teachers is maintained during each academic term. All teachers are selected at College Park in consultation with the respective department heads. Each department head appoints one of the assigned overseas instructors to act as his departmental representative on matters pertaining to departmental policy. A close liaison is maintained between the department head and his overseas representative.

Foreign languages and mathematics courses are taught by qualified nationals who have been approved by the respective department heads or their representatives.

Educational centers vary from term to term as dictated by military policy and other factors that result in the movement of military personnel. Classes are currently being offered at the following overseas centers.

CENTERS IN EUROPE, NORTH AFRICA AND THE NEAR EAST

France	Dreux	Nancy	Toul Rosieres
Bordeaux	Etain	Orleans	Troisfontaines
Braconne	Evreux	Orly	Verdun
Bussac	Fontainebleau	Paris	Germany
Captieux	Fontenet	Perigueux	Amberg
Chambley	Ingrandes	Poitiers	Ansbach
Chateauroux	Laon	Rocheport	Aschaffenburg
Chaumont	La Rochelle	Sampigny	Augsburg
Chinon	Maison Fort	Toul Engr.	Babenhausen
Croix Chapeau	Metz	Depot	Bad Aibling

Germany(Cont'd)	Germany(Cont'd)	Wildflecken	United Kingdom
Bad Kissingen	Kaufbeuren	Worms	Alconbury
Bad Kreuznach	Kirch Goens	Wuerzburg	Bentwaters
Bad Toelz	Kornwestheim	Zweibruecken	Bovingdon
Bamberg	Landsberg	Greece	Brize Norton
Baumholder	Landshut	Athens	Burderop Park
Bayreuth	Landstuhl	Italy	Buronwood
Berlin	Leipheim	Aviano	Bushey Hall
Birkenfeld	Ludwigsburg	Leghorn	Bushy Park
Bitburg	Mainz	Naples	Chelveston
Boeblingen	Mannheim	Rome	Chicksands
Bremerhaven	Munich	Udine	Colliers End
Buedingen	Murnau	Netherlands	Croughton
Dachau	Neubiberg	Soesterberg	Denham
Darmstadt	Neubruecke	North Africa	East Kirkby
Dexheim	Neckarsulm	Asmara,	Fairford
Erding	Nellingen	Ethiopia	Greenham
Erlangen	Nuernberg	Ben Guerir,	Common
Frankfurt	Oberammergau	French	High Wycombe
Freising	Pirmasens	Morocco	Kirknewton
Friedberg	Ramstein	Nouasseur,	Lindholme
Friedstenfeld- bruck	Regensburg	French	Manston
Fuerth	Rhein-Main	Morocco	Mildenhall
Fulda	Rothwesten	Rabat,	Molesworth
Garmisch	Schwabach	French	Prestwick
Gelnhausen	Schwaebisch	Morocco	Sculthorpe
Giessen	Gmuend	Sidi Slimane,	Sealand
Goeppingen	Hall	French	Shaftesbury
Grafenwoehr	Schweinfurt	Morocco	Shellingford
Hahn	Schwetzingen	Tripoli, Libya	Shepherd's Grove
Hammelburg	Sembach	Norway	South Ruislip
Hanau	Sprangdahlem	Oslo	Stansted-
Heidelberg	Straubing	Saudi Arabia	Mountfitchett
Heilbronn	Stuttgart	Abqaiq	Sturgate
Herzfeld	Trier	Dhahran	Upper Heyford
Herzo	Ulm	Rastanura	West Drayton
Hoechst	Vaihingen	Turkey	Wethersfield
Idar Oberstein	Wackernheim	Ankara	Wimpole Park
Kaiserslautern	Wertheim	Izmir	Woodbridge
Karlsruhe	Wiesbaden		

Cooperation of Information and Education Branches

The European Program would not be possible except for the valuable assistance and support of the Education Branches of the Armed Services. Full-time staff members are provided military transportation to and from

Europe. Extensive assistance is given to the University in matters involving registration, quarters, and many other essentials of university existence in the centers of troop concentration in Europe.

American and European civilians are admitted to the University of Maryland classes, provided that no armed services personnel are excluded thereby.

Degree Opportunities

Credit earned in the European program is considered as residence credit at the University of Maryland, as is credit earned at the stateside centers. Students may pursue studies leading to degrees at the University of Maryland or transfer credits to other institutions.

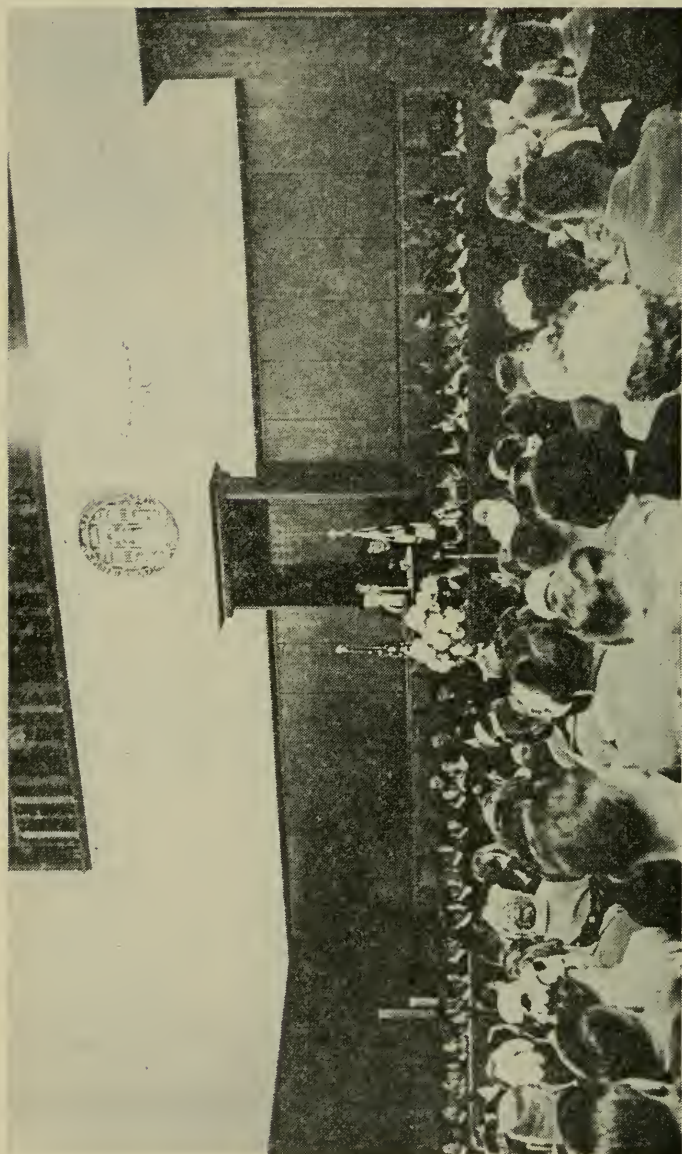
The Munich Program

The Overseas Program makes available at Munich a program of freshman and sophomore level courses, primarily designed to meet the needs of service dependents who are qualified for college work. The courses are of American college standard and are for the most part those required in the curricula of the College of Arts and Sciences.

At Munich, logistical support, including dormitory facilities, is made available to authorized dependents. Other students may register but they must make their own housing arrangements. Tuition, dormitory fees, books and materials involve a total cost of approximately \$400 per year.

Overseas Catalog

An independent catalog for the European Program is published by the Heidelberg office. A copy of this catalog may be obtained from the College of Special and Continuation Studies at College Park or by addressing a request to: University of Maryland, HAC c/o T. I. & E. section, APO 403 c/o Postmaster, New York, New York.



COMMENCEMENT IN HEIDELBERG

While graduates on the College Park campus receive diplomas marking the successful completion of academic work, the same scene is repeated overseas in historic Heidelberg. In that city's famed university, a full-blown class of CSCS' military graduates, cap- and gown-clad, are addressed by guest speaker Dr. Klaus Schaefer, rector of the University of Heidelberg. Other participants in the Maryland ceremony include Governor McKeldin of Maryland; President Elkins; Dean Ray Ehrensberger, CSCS; and military and civilian dignitaries.

NORTH ATLANTIC PROGRAM

Newfoundland

At the request of the North East Air Command, the College of Special and Continuation Studies inaugurated a Newfoundland program on July 1, 1951. This program is operated on an accelerated basis, with classes meeting two evenings each week for eight weeks.

Classes in accounting, economics, English, foreign languages, geography, government and politics, history, mathematics, sociology, and speech were offered during 1955-1956. Courses are offered at the following Newfoundland Centers:

Harmon Air Force Base—Stephenville

Pepperrell Air Force Base—St. John's

Argentia Naval Station—Argentia

Labrador

Goose Bay

Greenland

At the request of the North East Air Command, the College of Special and Continuation Studies inaugurated the Greenland program in February, 1953.

Classes in business administration, economics, English, French, German, geography, government and politics, history, and mathematics were offered during the 1955 terms at the following Greenland bases:

Sondrestrom (BW-8)

Thule

Further information regarding the Newfoundland, Labrador and Greenland centers may be obtained from Captain John Cantrell, Personnel Services Division, Headquarters, Eighth Air Force, Westover Air Force Base, Massachusetts, or the College of Special and Continuation Studies, University of Maryland, College Park, Maryland.

Iceland

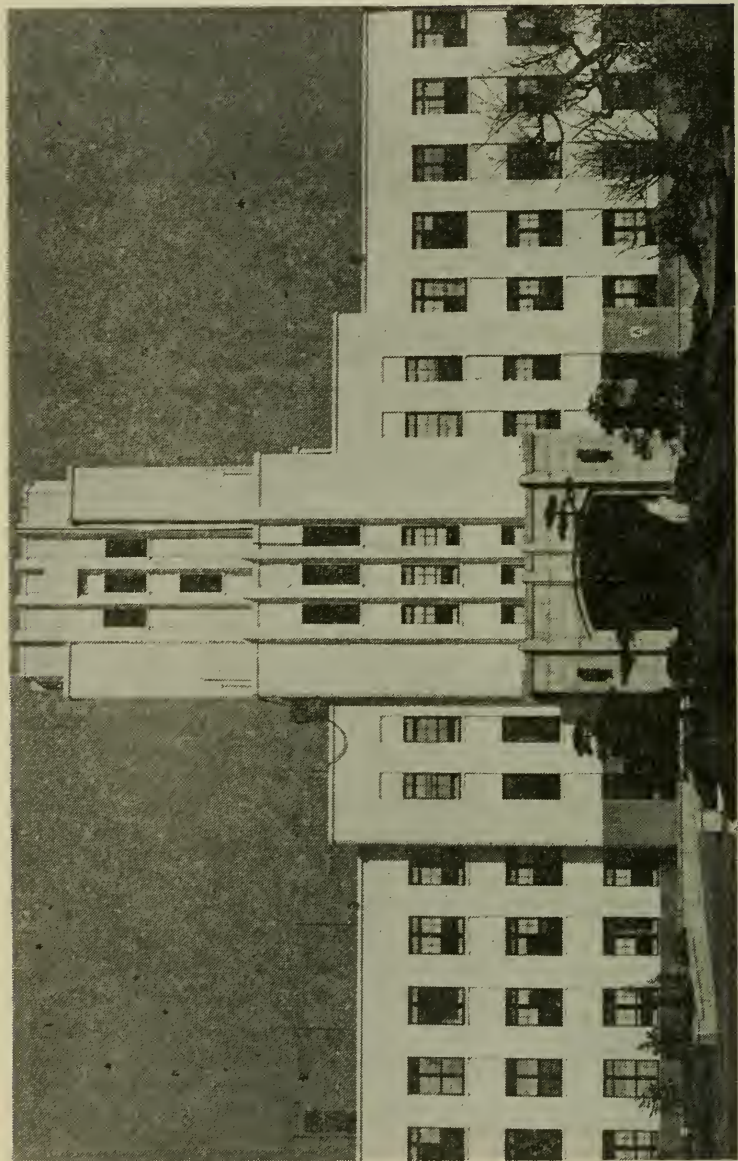
At the request of the Military Air Transport Service a center was established at Keflavik, Iceland, in December 1951. Courses have been offered in economics, English, foreign languages, history, government and politics, sociology, and speech.

Further information relative to Iceland offerings may be obtained from the Education Officer, Keflavik Air Force Base, Keflavik, Iceland, or Major Richard Jennings, Headquarters, Military Air Transport Service, Andrews Air Force Base, Washington, D. C., or this College.

Administration

The Newfoundland, Greenland and Iceland offerings are administered as the North Atlantic Program from the College of Special and Continuation Studies at College Park.

This program would not be possible without the valuable assistance and support of the Educational Personnel at the respective centers.



TOKYO, JAPAN

In this little "Pentagon" of United States and United Nations activities in Tokyo, Japan, the expanded Program of the University of Maryland is administered for the benefit of the personnel stationed in Korea, Okinawa and the "Land of the Rising Sun." CSCS activities were extended to the Far East in August, 1956.

ADMINISTRATIVE STAFF FAR EAST DIVISION

AUGUSTUS J. PRAHL, Ph.D., Director

LYNN B. BENNION, Ph.D., Associate Director

THOMAS M. LESCALLEET, B.S., Assistant Comptroller

MARGERY O. FRY, B.S., Assistant Director of Admissions and Registrar

FAR EAST DIVISION

History

In August, 1956, the University of Maryland facilities were extended into Japan, Okinawa and Korea. This extension was made possible by arrangements both with the military and with the University of California, which had conducted an educational program in the Far East since 1950. On its withdrawal, the University of California recommended to the Far East Command that the University of Maryland expand its Overseas Program by offering courses to American military and civilian personnel stationed across the Pacific Ocean. When the Maryland classes opened in September of 1956, there were 1,820 course enrollments in 83 classes at 42 centers.

The program in the Far East, like that in Europe, is operated on an accelerated basis, with classes meeting two evenings each week during an eight week period. There are five terms each year.

The administrative offices for the Far East Program are located in Tokyo, Japan. The Tokyo office maintains a director, an assistant comptroller, an assistant registrar and an assistant director of admissions.

Courses offered

The courses of study arranged for the University's program in the Far East are aimed primarily toward the attainment of the Bachelor of Science degree in Military Science and the Bachelor of Arts degree in General Studies. Courses are taught in business administration, economics, English, foreign languages, geography, government and politics, history, mathematics, military science, philosophy, psychology, sociology and speech.

Teaching Personnel

A faculty of between 130 and 160 full and part-time teachers is maintained during each academic term. All teachers are selected at College Park, in consultation with the respective department heads. A close liaison is maintained between department heads and their respective departmental instructors.

Centers where Maryland courses are offered vary from term to term, as dictated by military policy and other factors which result because of the movement of military personnel. Classes are currently being offered at the following centers in the Far East:

Japan

Ashiya Air Base
 Atsugi Naval Air Station
 Brady Air Base
 Chitose Air Base
 Camp Drake
 Fuchu Air Station
 Gifu Air Base
 Itami Air Base
 Itazuke Air Base
 Iwakuni Naval Air Station
 Johnson Air Base
 Kisarazu Air Base
 Camp Kokura
 Komski Air Base
 Misawa Air Base
 Mortyama Air Station
 Oppama Ordnance Depot
 Camp Otsu
 Camp Schimmelpfennig
 Shirio Air Base
 Tachikawa Air Base
 Tokyo Army Education Center
 Tokyo International Airport
 Camp Whittington
 Yokohama Army Education Center
 Fleet Activities Yokosuka
 Yokota Air Base
 Camp Zama

Korea

Ascom Area Command

I Corps

Jackson Compound Command
 I Corps Artillery
 36th Engineer Group
 Inchon Area Command
 7th Infantry Division
 Special Troops
 7th Div Artillery
 17th Inf. Regiment
 31st Infantry Regiment
 24th Infantry Div.
 Special Troops
 6th Tank Battalion
 34th Infantry Regiment
 21st Infantry Regiment
 24th Division Artillery
 19th Infantry Regiment
 Kimpo Air Base (K-14)
 Kunsan Air Base (K-8)
 Osan Air Base (K-55)
 Pusan Area Command
 Pyongtaek Air Base (K-6)
 Seoul Area Command
 Taegu-Taejon Area Command

Okinawa

Kadena Air Base
 Naha Air Base
 Ryukyus Command
 RYCOM AEC
 Machinato AEC
 Naha AEC

Cooperation of Education Branches

The Far East Program would not be possible except for the valuable assistance and support of the armed services Education Branches. Full-time staff members are provided military transportation to and from centers in the Pacific area. Extensive assistance is given to the University in matters involving registration, quarters, and other essentials of the University's existence in centers of troop concentration in the Orient.

Personnel other than military may be admitted to classes on a space-available basis.

Degree Opportunities

Credit earned in the Far East Program is considered as residence credit at the University of Maryland, as is credit earned at stateside, European Division and other overseas centers. Students may either pursue studies

leading to degrees in the University of Maryland, or they may transfer credits earned to other institutions.

Address for Further Information

Information concerning the Far East Program may be obtained by writing to the Tokyo Office. Inquiries should be addressed to: University of Maryland, 317 A Pershing Heights, APO 500, San Francisco, California.

SECTION V

COURSE DESCRIPTIONS

Below are listed by departments or special units, the courses offered in the academic year 1955-1956 through the College of Special and Continuation Studies.

The number of hours of credit is shown by the arabic numeral in parentheses after the title of the course.

Courses are designated by numbers as follows:

1 to 99: Courses for undergraduates.

100 to 199: Courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: Courses for graduates only.

A student pursuing a graduate program should keep constantly in touch with the graduate adviser of his major department.

AERONAUTICAL ENGINEERING*

Aero. E. 101. Aerodynamics (3).

Basic fluid mechanics and the aerodynamic theory of air foils.

For Graduates

Aero. E. 200. Advanced Aerodynamics (3)—Three lectures a week. Prerequisites, Aero. E. 115, Math. 64.

Review of thermodynamics and physical properties of gases. One dimensional flow of a perfect compressible fluid. Shock waves. Fundamental equations of aerodynamics of compressible fluid. Two-dimensional linearized theory of compressible flow, Prandtl-Glauert method, Ackeret method, Rayleigh-Janzen method. Hodograph method, Karman-Tsien approximation. Two-dimensional transonic and hypersonic flows. Exact solutions of two dimensional isentropic flow.

*Several Aeronautical Engineering courses described below are offered on the campus at times convenient to off-campus students.

Aero. E. 201. Advanced Aerodynamics (3)—Three lectures a week. Prerequisite, Aero E. 200.

Linearized theory of three-dimensional potential flow. Exact solution of axially symmetrical potential flow. Method of characteristics. (Two-dimensional and axially symmetrical flow), nozzle design; flow in jets; rotational flow of compressible fluid. One-dimensional viscous compressible flow. Laminar boundary layer of compressible fluids.

Aero. E. 202. Advanced Aircraft Structures (3)—Three lectures a week. Prerequisites, Math. 64 and Aero. E. 113, 114, or permission of the instructor.

Introduction to two dimensional theory of elasticity, energy methods, plate theory, theory of elastic instability.

Aero. E. 203. Advanced Aircraft Structures (3)—Three lectures a week. Prerequisite, Aero. E. 202.

Aerodynamic heating of structures, thermal stresses, creep, creep bending and buckling, visco-elastic theory.

Aero. E. 204. Aircraft Dynamics (3)—Prerequisites, Math. 64 and Aero. E. 114.

Dynamics of a rigid body and applications to airplane dynamics. Generalized coordinates and Lagrange's equations. Vibrations of simple systems. Dynamics of elastically connected masses. Influence coefficients. Mode shapes and principal oscillations. Transient stresses in an elastic structure.

Aero. E. 205. Aircraft Dynamics (3)—Prerequisites, Math. 64 and Aero. E. 101.

Wing divergence and aileron reversal. Theory of two dimensional oscillating airfoil. Flutter problems. Corrections for finite span. Compressibility effects.

Aero. E. 206, 207. Advanced Aircraft Power Plants (3, 3)—Two lectures and one laboratory period a week. Prerequisites, M. E. 100, Aero. E. 109, 110.

Special problems of thermodynamics and dynamics of aircraft power plants; jet and rocket engines. Research in power plant laboratory.

Aero. E. 208. Advanced Aircraft Design (3)—Three lectures a week. Prerequisites, Aero. E. 101, 102, 113, 114.

Theory and method of airplane design. Special emphasis is placed on the derivations and theoretical background of the formulas and experimental data used.

Aero. E. 209. Stability and Control (3)—Three lectures a week. Prerequisites, Aero. E. 101, 102.

Static and dynamic stability and control.

Aero. E. 210. Aerodynamic Theory (3)—Prerequisites, Aero. E. 101, Math. 64.

Fundamental equations in fluid mechanics. Irrotational motion. Conformal transformation. Joukowski airfoils. Thin airfoil theory. Lifting line theory. Wind tunnel corrections. Propellor theories. Linearized equations in compressible flow. Special topics.

Aero. E. 211. The Design and Use of Wind Tunnels (Supersonic) (3).

The design and use of wind tunnels (supersonic). Review of basic aerodynamics and thermodynamics. Problems in supersonic tunnel design such as pumping, power supply, condensation and dries. Equipment for measuring results such as balances, manometer, optical instruments, such as schlieren, spark illumination and X-ray equipment. Investigations in supersonic wind tunnels are described with special reference to similitude required for conversion to full scale.

Aero. E. 212, 213. Bodies at Supersonic Speeds (3, 3)—First and second semesters. Prerequisites, degree in Aero. E. or M. E. or equivalent, and consent of instructor.

Brief review of gasdynamics, drag, lift, stability, and damping on a body in a supersonic stream. Special aerodynamic problems in the design of supersonic missiles. Methods for obtaining accurate test data on the aerodynamic characteristics of supersonic missiles.

Aero. E. 214—Seminar. (In accordance with work outlined by the Aero. E. Staff.) Prerequisite, graduate standing.

Aero. E. 215—Research. (Credit in accordance with work outlined by Aero. Engr. staff.) Prerequisite, graduate standing.

Aero. E. 216. Selected Aeroballistics Problems (3)—Prerequisites, degree in Aero. E. or M. E. or equivalent and consent of instructor.

Physical processes and aerothermodynamic laws connected with the flow around supersonic missiles. Boundary layer problems and the transfer of heat and mass.

Aero. E. 217. Aerodynamics of Viscous Fluids (3)—Prerequisites, Aero. E. 101, Math. 64.

Fundamental concept Navier-Stokes' equations. Simple exact solutions. Laminar boundary layer theory. Pohlhausen method. Turbulent boundary layer; mixing length and similarity theories. Boundary layer in compressible flow.

Aero. E. 218. Selected Topics in Aerodynamics (3)—Prerequisites, Aero. E. 210, 115.

Topics of current interest and recent advances in the field of aerodynamics.

MICROBIOLOGY

Bact. 1. General Bacteriology (4). Two lectures and two laboratory periods a week.

The physiology, culture and differentiation of bacteria. Fundamental principles of microbiology in relation to man and his environment. Laboratory fee, \$10.00.

Bact. 101. Pathogenic Bacteriology (4). Two lectures and two laboratory periods a week.

The role of microorganisms in the diseases of man and animals with emphasis upon the differentiation and culture of bacterial species, types of diseases, modes of disease transmission; prophylactic, therapeutic and epidemiological aspects. Laboratory fee, \$10.00.

Bact. 108. Epidemiology and Public Health (2). Two lecture periods a week. Prerequisite, Bact. 1.

History, characteristic features, and epidemiology of the important communicable diseases; public health aspects of man's struggle for existence; public health administration and responsibilities; vital statistics.

Bact. 202. Genetics of Microorganisms (2). Two lecture periods a week. Prerequisite, consent of instructor.

An introduction to genetic principles and methodology applicable to microorganisms.

Bact. 204. Bacterial Metabolism (2)—Two lecture periods a week. Prerequisite, 30 credits in bacteriology and allied fields, including Chem. 161 and 162.

Bacterial enzymes, nutrition of autotrophic and heterotrophic bacteria, bacterial growth factors, dissimilation of carbohydrates and nitrogenous substrates.

Bact. 206, 208. Special Topics (1, 1)—Prerequisite, 20 credits in bacteriology.

Presentation and discussion of fundamental problems and special subjects in the field of bacteriology.

Bact. 210. Virology and Tissue Culture (1)—Two lecture periods a week. Prerequisite, Bact. 101 or equivalent.

Characteristics and general properties of viruses and rickettsiae. The principles of tissue culture.

Bact. 211. Virology and Tissue Culture Laboratory (2)—Two three hour laboratory periods a week. Prerequisite, Bact. 101 or equivalent. Registration only upon consent of instructor.

Laboratory methods in virology and tissue culture. Laboratory fee, \$20.00.

BOTANY

Bot. 1. General Botany (4). Two lectures and two laboratory periods a week. First and second semester; summer.

General introduction to botany, touching briefly on all phases of the subject. Emphasis is on the fundamental biological principles of the higher plants. Laboratory fee, \$5.00.

BUSINESS ADMINISTRATION

B. A. 10, 11. Organization and Control (2, 2). Required in all Business Administration curriculums.

A survey course treating the internal and functional organization of a business enterprise. B. A. 11 includes industrial management, organization and control.

B. A. 20, 21. Principles of Accounting (4, 4). Required in all Business Administration curriculums. Prerequisite, Sophomore training.

The fundamental principles and problems involved in accounting for proprietorships, corporation and partnerships.

B. A. 130. Elements of Business Statistics (3). Prerequisite, Junior standing. Required for graduation. Laboratory fee \$3.50.

This course is devoted to a study of the fundamentals of statistics. Emphasis is placed upon the collection of data; hand and machine tabulation; graphic charting; statistical distribution; averages; index numbers; sampling; elementary tests and reliability; and simple correlations.

B. A. 140. Financial Management (3). Prerequisite, Econ. 140.

This course deals with the principles and practices involved in the organization, financing, and reconstruction of corporations; the various types of securities and their use in raising funds; apportioning income, risk, and control; intercorporate relations; and new developments. Emphasis on solution of problems of financial policy faced by management.

B. A. 160. Personnel Management (3). Prerequisite, Econ. 160.

This course deals essentially with functional and administrative relationships between management and the labor force. It comprises a survey of the scientific selection of employees, "in-service" training, job analysis, classification and rating, motivation of employees, employee adjustments, wage incentives, employee discipline and techniques of supervision, and elimination of employment hazards.

B. A. 163. Industrial Relations (3). Prerequisite, Econ. 160.

A study of the development and methods of organized groups in industry with reference to the settlement of labor disputes. An economic and legal analysis of labor union and employer association activities, arbitration, mediation, and conciliation; collective bargaining, trade agreements, strikes, boycotts, lockouts, company unions, employee representation, and injunctions.

B. A. 164. Recent Labor Legislation and Court Decisions (3). Prerequisite B. A. 160 and senior standing.

B. A. 165. Office Management (3). Prerequisite, B. A. 11 or junior standing.

Considers the application of principles of scientific management in their application to office work.

B. A. 166. Business Communications (3). Prerequisite, junior standing.

A Systematic study of the principles of effective written communications in business. The fundamental aim is to develop the ability to write clear, correct, concise, and persuasive business letters and reports.

B. A. 167. Job Evaluation and Merit Rating (2). Prerequisite, B. A. 160.

The investigation of the leading job evaluation plans used in industry, study of the development and administrative procedures, analyzing jobs and writing job descriptions, setting up a job evaluation plan, and relating job evaluation to pay scales. Study of various employee merit rating programs, the methods of merit rating, and the uses of merit rating.

B. A. 169. Industrial Management (3). Prerequisites, B. A. 11 and 160.

Studies the operation of a manufacturing enterprise. Among the topics covered are product development, plant location, plant layout, production planning and control, methods analysis, time study, job analysis, budgetary control, standard costs, and problems of supervision. An inspection trip to a large manufacturing plant is made at the latter part of the semester.

B. A. 170. Transportation Services and Regulation (3). Prerequisite, Econ. 32 or 37.

A general course covering the five fields of transportation, their development, services and regulation. (This course is a prerequisite for all other transportation courses.)

B. A. 177. Motion Economy and Time Study (3). Prerequisite, B. A. 169.

A study of the principles of motion economy, simo charts, micromotion study, the fundamentals of time study, job evaluation, observations, standard times, allowances, formula construction, and wage payment plans.

B. A. 178. Production Planning and Control (2)—Prerequisite B. A. 169.

Analysis of the man-, and material-, and machine requirements for production according to the several types of manufacture. The development and application of inventory records, load charts, production orders, schedules, production reports, progress reports and control reports. One lecture period and one laboratory period each week.

B. A. 179. Problems in Supervision (3). Prerequisite, B. A. 169.

A case study course of supervisory problems divided into difficulties with subordinates, with associates, and with superiors. The purposes of the course are to apply general principles of industrial management to concrete cases and to extract principles from a study of cases.

B. A. 180, 181. Business Law (4, 4). Prerequisite, senior standing. Required in all Business Administration curriculums.

Legal aspects of business relationships, contracts, negotiable instruments, agency, partnerships, corporations, real and personal property, and sales.

B. A. 269. Studies of Special Problems in Employer-Employee Relationships. (Arranged).

CHEMISTRY

Chem. 1, 3. General Chemistry (4, 4). Laboratory fee, \$10.00. Prerequisite, 1 year high school algebra or equivalent.

Chem. 19. Elements of Quantitative Analysis (4). Prerequisite, Chem. 15. Laboratory fee, \$10.00.

Chem. 101. Advanced Inorganic Chemistry (2). Prerequisites, Chem. 37, 38, 123.

Chem. 141, 143. Advanced Organic Chemistry (2, 2). Prerequisites, Chem. 37, 38.

An advanced study of the compounds of carbon.

Chem. 144. Advanced Organic Laboratory (2). Prerequisites, Chem. 19 or 23, and Chem. 37, 38. Laboratory fee, \$10.00.

Chem. 146, 148. The Identification of Organic Compounds (2, 2). Prerequisites, Chem. 141-143, or concurrent registration therein. Laboratory fee, \$10.00.

The systematic identification of organic compounds.

Chem. 161, 163. Biochemistry (2, 2)—Two lectures per week. Prerequisites, Chem. 31, 33, or Chem. 35, 37.

This course is designed primarily for students in agriculture, bacteriology, or chemistry, and for those students in home economics who need a more extensive course of biochemistry than is offered in Chem. 81, 82.

Chem. 162, 164. Biochemistry Laboratory (2, 2). Prerequisites, Chem. 32, 34, or Chem. 36, 38. Laboratory fee, 10.00.

Chem. 187, 189. Physical Chemistry (3, 3). Prerequisites, Chem. 19 or 21; Phys. 20, 21; Math. 20, 21, or consent of instructor.

A course primarily for chemists and chemical engineers.

Chem. 201, 203. The Chemistry of the Rarer Elements (2, 2).

Chem. 205. Radiochemistry (2).

Chem. 261, 263. Advanced Biochemistry (2, 2). Prerequisites, Chem. 141, 143, or consent of the instructor.

Chem. 262, 264. Advanced Biochemistry Laboratory (2, 2). Prerequisite, consent of the instructor. Laboratory fee, \$10.00.

Chem. 285. Colloid Chemistry (2).

Chem. 287. Infra-red and Raman Spectroscopy (2). Two lectures a week. Prerequisites, Chem. 141, 143, 187, 189 and permission of instructor.

Chem. 289. Selected Topics in Advanced Colloid Chemistry (2)—Prerequisite, Chemistry 285.

Chem. 299. Reaction Kinetics (3).

Chem. 303. Electrochemistry (3).

CHEMICAL ENGINEERING

Ch. E. 140. Introduction to Nuclear Technology (2). Two lectures a week. Prerequisite, consent of instructor.

Engineering description of the different parts of the atomic energy complex including mining and refining of ores, isotopic and chemical separations and nuclear reactor operation. The novel chemical engineering techniques employed are discussed. The emphasis is on the nuclear reactor. This is an orientation course for those only generally interested in applied atomic energy.

Ch. E. 142. Environmental Considerations of Nuclear Engineering (3). Three lectures a week. Prerequisite, permission of instructor.

Engineering analysis of protection of the public and the environment from the hazards of nuclear energy operations. Emphasis is on the handling and disposal of gaseous, liquid and solid radioactive wastes. Meteorological, hydrological and geological phases are included. Typical problems encountered from mining of ores through nuclear reactor operations and chemical separations are considered. Legislative and economic factors, site selection, plant design and operations as related to the environment are discussed.

Ch. E. 214. Corrosion and Metal Protection (4). Four lecture hours a week. Prerequisites, Ch. E. 114 or Chem. 189 or Chem. 190 or consent of the instructor.

The subjects to be covered include: theories of corrosion of ferrous and non-ferrous metals, passive films, corrosion inhibitors, metal cleaning, stress corrosion, corrosive chemicals, electrolytic protection, restoration of ancient bronzes, organic coatings, metal coloring, parkerizing, hot dip coatings, plated coatings and selection of engineering materials. Class demonstrations will illustrate the subject matter. Due to the diversity of subjects and scattered sources, considerable outside reading will be necessary.

Ch. E. 280, 281. Graduate Chemical Engineering Thermodynamics (3, 3). Prerequisites, Ch. E. 109, f, s; Ch. E. 110; or permission of instructor.

Advanced studies of the applications of the principles of engineering and chemical thermodynamics to some industrial problems encountered in the practice of chemical engineering.

Ch. E. 302, 303. Nuclear Reactor Engineering (3, 3). Three lectures a week. Prerequisite, permission of instructor.

Introduction to the engineering problems of the design, construction and operation of typical nuclear reactors, including general design, nuclear reactor theory, materials of construction, heat transfer, control, etc. Emphasis is toward commercial nuclear reactors.

Ch. E. 311. Nuclear Separation Engineering (2). Two lectures a week. Prerequisite, permission of instructor.

Application of chemical engineering to the chemical and isotopic separations necessary for nuclear reactor operation. These separations include (1) processing of uranium, thorium and other ores, (2) chemical separation of plutonium, uranium, fission products and other elements from materials irradiated in nuclear reactors, (3) treatment and disposal of radioactive wastes, (4) isotopic separation of U235 and heavy water.

Ch. E. 315. Industrial Applications of Nuclear Reactors (2). Two lectures a week. Prerequisite, permission of instructor.

An engineering survey of the current applications and those under development. Included are such uses of radiation as producing valuable radio-active and stable isotopes, synthesizing chemicals, and preserving foods. The changes in the design and operation of power-only nuclear reactor complexes required for such additional applications are discussed.

METALLURGICAL OPTION

Met. 164, 166. Thermodynamics of Metallurgical Processes (3, 3). Three lectures a week. Prerequisites, Chem. 187, 189; Chem. 188, 190.

The application of the principles of thermodynamics to metallurgical systems with emphasis on steel making; laws of chemical reactions; materials and reactions in steel making processes; applications of theory to steel making; applications of theory to selected non-ferrous systems.

Met. 188, 189. Alloy Steels I, II (2, 2). Two lectures per week. Prerequisites, graduate or undergraduate standing. (Met. 188 is not prerequisite to Met. 189).

Recent advances in the physical metallurgy of steel: ferrite, cementite, and austenite; the isothermal transformation of austenite; decomposition of austenite by continuous cooling; the effects of various metallurgical treatments on the mechanical properties of steels. The properties of quenched and tempered steels; importance of hardenability in engineering applications; calculation of hardenability; variables affecting hardenability; intensifiers; effects of alloying elements on the mechanical properties of steels; efficient use of alloying elements in steel.

(Note: To be offered at off-campus naval installations as determined by departmental and registration requirements.)

Met. 228. Seminar in Metallurgy (1). One meeting a week. Required of graduate students in metallurgical curriculum.

Survey of metals literature, and oral presentation of prepared reports.

The content of this course is constantly changing, so a student may receive a number of credits by re-registration.

Met. 229. Gases in Metals (2). Two lectures per week. Prerequisites, Met. 182, 183, or permission of the instructor.

A consideration of the behavior of gases in metals with emphasis on the action of hydrogen in solid metals.

Met. 230, 231. Mechanical Metallurgy (3, 3). Three lectures a week. Prerequisites, Math. 114, 115; Met. 182, 183.

Theory of plastic flow and rupture of polycrystalline metals; the influence of combined stresses, rate of deformation and temperature variation on the flow and rupture of metals. Flow and fracture in single crystals; theoretical crystal plasticity, theory of failure, recovery, recrystallization, and texture formation.

Met. 232, 233. Advanced Physical Metallurgy (3, 3). Three lectures a week. Required of graduate students in metallurgical curriculum.

The principles of X-ray metallography; the atomic theory of metals; magnetic materials; phase equilibria; review of important binary and ternary systems, diffusion and transformations in the solid state. (Offered at the Navy Department.)

ECONOMICS

Econ. 31, 32. Principles of Economics (3, 3). Prerequisite, sophomore standing. Required in the Business Administration Curriculums.

A general analysis of the functioning of the economic system. A considerable portion of the course is devoted to a study of basic concepts and explanatory principles. The remainder deals with the major problems of the economic system.

Econ. 131. Comparative Economic Systems (3). Prerequisite, Econ. 32 or 37.

An investigation of the theory and practice of various types of economic systems. The course begins with an examination and evaluation of the capitalistic system, and is followed by an analysis of alternative types of economic systems such as fascism, socialism, and communism.

Econ. 132. Advanced Economic Principles (3). Prerequisite, Econ. 32. Required for Economics majors.

This course is an analysis of price and distribution theory with special attention to recent developments in the theory of imperfect competition.

Econ. 134. Contemporary Economic Thought (3). Prerequisite, Econ. 32.

A survey of recent trends in American, English, and Continental economic thought with special attention being given to the work of such economists as W. C. Mitchell, J. R. Commons, T. Veblen, W. Sombart, J. A. Hobson, and other contributors to the development of economic thought since 1900.

Econ. 136. International Economic Policies and Relations (3). Prerequisite, Econ. 32 or 37.

A descriptive and theoretical analysis of international trade. Full consideration is given to contemporary problems facing international trade and to the impact of governmental policy upon international commercial relations.

Econ. 137. The Economics of National Planning (3). Prerequisite, Econ. 32 or 37.

An analysis of the principles and practice of economic planning with special reference to the planning problems of Great Britain, Russia, and the United States.

Econ. 138. Economics of the Soviet Union (3). Prerequisite, Econ. 32 or 37. Required by students in Soviet Area and Program. (European Program).

Analysis of the organization, operating principles and performance of the Soviet economy with attention to the historical and ideological background, planning, resources, industry, agriculture, domestic and foreign trade, finance, labor, and the structure and growth of national income.

Econ. 140. Money and Banking (3). Prerequisite, Econ. 32 or 37.

A study of the organization, functions, and operation of our monetary, credit, and banking system; the relation of commercial banking to the Federal Reserve System; the relation of money and credit to prices; domestic and foreign exchange; and the impact of public policy upon banking and credit.

Econ. 142. Public Finance and Taxation (3). Prerequisite, Econ. 32 or 37.

A study of governmental fiscal policy with special emphasis upon sources of public revenue, the tax system, government budgets, and the public debt.

Econ. 160. Labor Economics (3). Prerequisite, Econ. 32 or 37.

The historical development and chief characteristics of the American labor movement are first surveyed. Present-day problems are then examined in detail; wage theories, unemployment, social security, labor organization, collective bargaining.

Econ. 171. Economics of American Industries (3). Prerequisite, Econ. 32 or 37.

A study of the technology, economics and geography of twenty representative American industries.

EDUCATION

See College of Education catalog for a full listing of courses.

Ed. 90. Development and Learning (3).

A study of the principles of learning and their application to school situations. Designed to meet the usual teacher-certification requirement for educational psychology.

Ed. 102. History of Education in the United States (3).

A study of the origins and development of the chief features of the present system of education in the United States.

Ed. 107. Philosophy of Education (2-3).

A study of the great educational philosophers and their contributions to modern education. Earlier periods.

Ed. 121. The Language Arts in the Elementary School (2).

Teaching of spelling, handwriting, oral and written expression, and creative expression. Special emphasis given skills having real significance to the pupils.

Ed. 122. The Social Studies in the Elementary School (2).

Consideration given to curriculum, organization and methods of teaching, evaluation of newer materials in the field.

Ed. 123. The Child and the Curriculum (3).

Relationship of the elementary school curriculum to child growth and development. Recent trends in curriculum organization; the effect of environment on learning; readiness to learn; and adapting curriculum content and methods to maturity levels of children.

Ed. 124. Arithmetic in the Elementary School (2)

Emphasis on materials and procedures which help pupils sense arithmetical meanings and relationships. Helps teachers gain a better understanding of the number system and arithmetical processes.

Ed. 127. Teaching in Elementary Schools (2-6).

An overview of elementary school teaching designed for individuals without specific preparation for elementary school teaching or for individuals without recent teaching experience.

Ed. 134. Materials and Procedures for the Secondary School Core Program (3).

This course is designed to bring practical suggestions to teachers who are in charge of core classes in junior and senior high schools. Materials and teaching procedures for specific units of work are stressed. Fee, \$1.00.

Ed. 145. Principles and Methods of Secondary Education (2-3).

This course is concerned with the principles and methods of teaching in junior and senior high schools.

Ed. 147. Audio-Visual Education (3).

Sensory impressions in their relation to learning; projection apparatus, its cost and operation; slides, film-strips, and films; physical principles underlying projection;

auditory aids to instruction; field trips; pictures, models, and graphic materials; integration of sensory aids with organized instruction. Fee, \$1.00.

Ed. 150. Educational Measurement (2).

Constructing and interpreting measures of achievement.

Ed. 153. The Teaching of Reading (2)

Concerned with the fundamentals of developmental reading instruction, including reading readiness, use of experience records, procedures in using basal readers, the improvement of comprehension, teaching reading in all areas of the curriculum, uses of children's literature, the program in word analysis, and procedures for determining individual needs.

Ed. 154. Remedial Reading Instruction (2).

For supervisors and teachers who wish to help retarded readers. Concerned with causes of reading difficulties, the identification and diagnosis of retarded pupils, instructional materials, and teaching procedures. Prerequisite, Ed. 153 or the equivalent.

Ed. 161. Principles of Guidance (3).

Overview of principles and practices of guidance-oriented education.

Ed. 162. Mental Hygiene in the Classroom (2).

The practical application of the principles of mental hygiene to classroom problems.

Ed. 163, 164, 165. Community Study Laboratory I, II, and III (2, 2, 2).

Involves experience from the educational standpoint with the agencies, institutions, cultural patterns, living conditions, and social processes which play significant roles in shaping the behavior of children and adults and which must be understood by individuals working toward school and community improvement. Each participant becomes a member of a group in a given area of study and concentrates on problems which have direct application in his school situation. Readings are integrated with techniques of study.

Ed. 170. Introduction to Special Education (2).

Designed to give an understanding of the needs of all types of exceptional children, stressing preventive and remedial measures.

Ed. 171. Education of Retarded and Slow-Learning Children (2).

A study of retarded and slow-learning children, including discovery, analysis of causes, testing techniques, case studies, and remedial educational measures.

Ed. 189. Workshops, Clinics, and Institutes (1-6).

The following types of educational enterprises may be scheduled under this course heading: workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals, and supervisors. The maximum number of credits that may be earned under this course symbol toward any degree is six semester hours; the symbol may be used two or more times until six semester hours have been reached.

Ed. 191. Principles of Adult Education (2).

A study of aspects of adult education in the United States, selected in terms of interests of students.

For Graduates

Ed. 203. Problems in Higher Education (3).

A study of present problems in higher education.

Ed. 207. Seminar in History and Philosophy of Education (2).**Ed. 210. The Organization and Administration of Public Education (3).**

The basic course is school administration. Deals with the organization and administration of school systems—at the local, state, and federal levels; and with the administrative relationships involved.

Ed. 211. The Organization, Administration, and Supervision of Secondary Schools (2).

The work of the secondary school principal. The course includes topics such as personnel problems, supervision, school-community relationships, student activities, schedule making, and internal financial accounting.

Ed. 212. School Finance and Business Administration (3).

An introduction to principles and practices in the administration of the public school finance activity. Sources of tax revenue, the budget, and the function of finance in the educational program are considered.

Ed. 214. School Plant Planning (2).

An orientation course in which the planning of school buildings is developed as educational designing with reference to problems of site, building facilities, and equipment.

Ed. 216. High School Supervision (2). Prerequisite, teaching experience.

Deals with recent trends in supervision; the nature and function of supervision; planning supervisory programs; evaluation and rating; participation of teachers and other groups in policy development; school workshops; and other means for the improvement of instruction.

Ed. 217. Administration and Supervision in Elementary Schools (2).

Problems in organizing and administering elementary schools and improving instruction.

Ed. 219. Seminar in School Administration (2).**Ed. 225. School Public Relations (3).**

A study of the interrelationships between the community and the school. Public opinion, propaganda, and the ways in which various specified agents and agencies within the school have a part in the school public relations program are explored.

Ed. 227. Public School Personnel Administration (3).

A comparison of practices with principles governing the satisfaction of school personnel needs, including a study of tenure, salary schedules, supervision, rewards, and other benefits.

Ed. 229. Seminar in Elementary Education (2).

Primarily for individuals who wish to write seminar papers. Enrollment should be preceded by at least 12 hours of graduate work in Education.

Ed. 230. Elementary School Supervision (2).

Concerned with the nature and function of supervision, various supervisory techniques and procedures, human relationship factors, and personal qualities essential for effective supervision.

Ed. 234. The School Curriculum (2-3).

A foundations course embracing the curriculum as a whole from early childhood through adolescence, including a review of historical developments, an analysis of conditions affecting curriculum change, an examination of issues in curriculum making, and a consideration of current trends in curriculum design.

Ed. 237. Curriculum Theory and Research (2).

The school curriculum considered within the totality of factors affecting pupil behavior patterns, an analysis of research contributing to the development of curriculum theory, a study of curriculum theory as basic to improved curriculum design, the function of theory in guiding research, and the construction of theory through the utilization of concepts from the behavioral research disciplines.

Ed. 243. Problems of Teaching Arithmetic in Elementary Schools (2).

Implications of current theory and results of research for the teaching of arithmetic in elementary schools.

Ed. 248. Seminar in Industrial Arts and Vocational Education (2).**Ed. 250. Analysis of the Individual (3).**

Knowing students through use of numerous techniques. Ed. 161 desirable as prerequisite.

Ed. 253. Guidance Information (2).

Finding, filing, and using information needed by students for making choices, plans, and adaptations in school, occupations, and in interpersonal relations. Ed. 161 is desirable as prerequisite.

Ed. 254. Organization and Administration of Guidance Programs (2).

Instilling the guidance point of view and implementing guidance practices. All guidance courses except Seminar are prerequisites.

Ed. 260. School Counseling: Theoretical Foundations and Practice (3).
Prerequisites, Ed. 161, 250, 253. Prerequisites may be waived by instructor.

Exploration of learning theories as applied to counseling in schools, and practices which stem from such theories.

Ed. 263, 264. Aptitudes and Aptitude Testing (2, 2). (Offered in Baltimore.)**Ed. 267. Curriculum Construction Through Community Analysis (2).**
Prerequisites, Ed. 163, 164, 165.

Selected research problems in the field of community study with emphasis on the Baltimore area.

Ed. 269. Seminar in Guidance (2).**Ed. 288. Special Problems in Education (1-6).**

Master of education or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for credit under this number.

Ed. 289. Research—Thesis (1-6).

Students who desire credit for a master's thesis, a doctoral dissertation, or a doctoral project should use this number.

ELECTRICAL ENGINEERING

E. E. 100. Alternating-Current Circuits (4). Prerequisites, Phys. 21; Math. 21; E. E. 1. Required of juniors in electrical engineering. Laboratory fee, \$4.00.

Single- and polyphase-circuit analysis under sinusoidal and non-sinusoidal conditions of operation. Mesh-current and nodal methods of analysis. Harmonic analysis by the Fourier series method. Theory and design of tuned coupled circuits.

E. E. 101. Engineering Electronics (5). Prerequisites, E. E. 100. Required of juniors in electrical engineering. Laboratory fee, \$4.00.

Theory and applications of electron tubes and associated circuits with emphasis on equivalent circuit analysis of audio amplifiers, reactance tubes, feedback amplifiers, oscillators, and detectors.

E. E. 102. Alternating Current Machinery (4). Prerequisites, E. E. 65 and E. E. 100. Required of seniors in electrical engineering. Laboratory fee \$4.00.

The operating principles of alternating-current machinery considered from theoretical, design, and laboratory points of view. Synchronous generators and motors; single and polyphase transformers; three-phase induction generators and motors, single-phase induction motors; rotary converters and mercury-arc rectifiers.

E. E. 104. Communication Circuits (4). Prerequisites, E. E. 60 and E. E. 100. Required of juniors in electrical engineering.

Long-line theory applied to audio-frequency and ultra-high-frequency systems. Elements of filter theory; impedance matching; Maxwell's equations in rectangular and cylindrical coordinates and in scalar notation; elements of rectangular wave guide theory.

E. E. 105, 106. Radio Engineering (4, 4). Prerequisite, E. E. 101. Laboratory fee \$4.00.

Characteristics of radio-frequency circuits including the design of tuned coupled circuits and Class C amplifiers. Amplification, oscillation, modulation, and detection with particular emphasis on radio-frequency amplification and broadcast-range reception. Elements of wave propagation and antenna systems.

E. E. 107. Electrical Measurements (4). Prerequisites, E. E. 100 and Math. 64. Laboratory fee, \$4.00.

Measurement and calibration techniques, employing potentiometers, ballistic galvanometers, bridges, electromagnetic and cathode-ray oscillographs, watt-hour meters, and electronic instruments.

E. E. 108. Electric Transients (3). Prerequisites, E. E. 101, and Math. 64.

Required of seniors in electrical engineering. Current, voltage, and power transients in lumped-parameter networks. Introduction and utilization of Laplace transformers.

E. E. 109. Pulse Techniques (3). Prerequisite, E. E. 101 and Math. 64. Required of seniors in electrical engineering.

Generation, shaping, amplification, and delay of non-sinusoidal wave-forms. Circuit design techniques and applications to radar, television, and computers.

E. E. 110. Transistor Circuitry (3). Prerequisite, E. E. 101.

P-n junction theory; point contact and junction-type transistors; transistor parameters; equivalent circuits; typical transistor amplifier and oscillator circuits.

E. E. 114. Applied Electronics (3). Prerequisite, E. E. 101.

Detectors and discriminators; gas tube characteristics and associated circuits; photoelectric tubes and associated circuits; rectifiers and regulators; vacuum tube instruments.

E. E. 115. Feedback Control Systems (3). Prerequisites, E. E. 101 and E. E. 108. Laboratory fee, \$4.00.

Servomechanism and automatic regulators; investigations of electric, hydraulic, pneumatic, and mechanical elements; analysis of system differential equations and development of transfer functions; stability criteria.

E. E. 120. Electromagnetic Waves (3). Prerequisites, Math 64 and senior standing in electrical engineering or physics.

Basic mathematical theory of electromagnetic wave propagation employing Maxwell's equations in scalar and vector form and in generalized coordinates; application to wave-guide transmission.

E. E. 130. Electronic Analog Computers (3). Prerequisites, Math. 64, E. E. 101.

Principles of electronic computers of the analog type. Analog computing operations, basic computing components, operational amplifiers, d-c amplifiers, instrument servos, multipliers, and function generators.

E. E. 131. Electronic Digital Computers (3). Prerequisites, Math. 64, E. E. 101.

Principles of electronic computers of the digital type. Digital computing operations, basic computing and control circuits, logical design, arithmetic unit, memory systems, and control units.

E. E. 160, 161. Vacuum Tubes (3, 3). Prerequisites, Math. 64, and senior standing in electrical engineering or physics.

Electron emission; laws of electron motion; space charge effects; noise in vacuum tubes; magnetic lenses; klystrons; magsetrons, photoelectric tubes; other special-purpose tubes.

For Graduates

E. E. 200. Symmetrical Components (3). Prerequisite, E. E. 102.

Application of the method of symmetrical components to synchronous generators, transmission lines, transformers, static loads possessing mutual coupling, and induction motor loads. Methods of calculating positive, negative, and zero sequence reactances of transmission lines. Complete network solution in terms of symmetrical components and comparison of these solutions with that obtained by classical methods. Methods of measuring positive, negative, and zero sequence reactances of synchronous generators.

E. E. 201. Electromagnetic Theory (3). Prerequisite, E. E. 120 or E. E. 215.

Theoretical analysis and engineering applications of Laplace's, Poisson's, and Maxwell's equations.

E. E. 202, 203. Transients in Linear Systems (3, 3). Prerequisite, undergraduate major in electrical engineering, mechanical engineering, or physics.

Operational circuit analysis; the Fourier integral, transient analysis of electrical and mechanical systems and vacuum tube circuits by the Leplace transformer method.

E. E. 204. Advanced Circuit Analysis (3). Prerequisites, undergraduate major in electrical engineering or physics.

The mathematics of circuit analysis including determinants, matrices, complex variable, and the Fourier Integral.

E. E. 206, 207. Microwave Engineering (3, 3). Prerequisite, E. E. 201 or E. E. 216. Laboratory fee for E. E. 207, \$4.00.

Basic consideration in solving field problems by differential equations; circuit concepts and their validity at high frequency; propagation and reflection of electromagnetic waves; guided electromagnetic waves; high frequency oscillators and tubes; radiation engineering.

E. E. 212, 213. Servomechanisms (3, 3). Prerequisite, undergraduate major in electrical or mechanical engineering or physics. (It is desirable that the student should have had E. E. 202.)

The design and analysis of regulatory systems, emphasizing servo-mechanisms. Regulatory systems are analyzed by means of the governing differential equations to provide background for more practical studies of frequency spectrum analysis. Characteristics of actual systems and practical considerations are studied.

E. E. 215, 216. Radio Wave Propagation (3, 3). Prerequisite, undergraduate major in electrical engineering, physics, or mathematics. E. E. 215 required of M.S. degree candidates in electrical engineering.

Maxwell's wave equation; concept of retarded magnetic vector potential, propagation over plane earth; propagation over spherical earth; refraction; meteorological effects; complex antennas; air-to-air propagation; lobe modulation.

E. E. 218, 219. Signal Analysis and Noise (3, 3). Prerequisite, undergraduate major in electrical engineering or physics.

Fourier series and integrals; phase and frequency modulation; noise figures of linear systems; shot effect; power spectra; applications of correlation function; properties of noise.

E. E. 220, 221. Theory of Communications (3, 3). Prerequisites, E. E. 218, 219.

Measure of information and channel capacity; methods of describing random signals and circuit analysis involving those signals. The statistical theory of communication systems. Systems which are statistically optimum.

E. E. 230. Mathematics of Circuit Analysis (3). Prerequisites, undergraduate major in electrical engineering or physics.

The mathematics of Circuit analysis including determinants, matrices, complex variable, and the Fourier integral.

E. E. 231. Active Network Analysis (3). Prerequisite, E. E. 230.

The complex frequency plane; conventional feedback amplifier theory; Bode's mathematical definitions of feedback and sensitivity; theorems for feedback circuits; stability and physical realizability of electrical networks; Nyquist's and Routh's criteria for stability.

E. E. 232, 233. Network Synthesis (3, 3). Prerequisite, E. E. 231 or equivalent.

Design of driving-point and transfer impedance functions with emphasis on the transfer loss and phase of minimum-phase networks; flow diagrams; physical network characteristics, including relations existing between the real and imaginary components of network functions; modern methods of network synthesis.

E. E. 235. Applications of Tensor Analysis (3). Prerequisite, E. E. 202 or E. E. 230.

The mathematical background of tensor notation which is applicable to electrical engineering problems. Applications of tensor analysis to electric circuit theory and to field theory.

E. E. 250. Electrical Engineering Research. Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Six semester hours of credit in E. E. 250 are required of M.S. degree candidates and a minimum of eighteen semester hours is required of Ph.D. candidates.

A thesis covering an approved research problem and written in conformity with the regulations of the Graduate School is a partial requirement for either the degree of Master of Science or the degree of Doctor of Philosophy in electrical engineering.

ENGLISH LANGUAGE AND LITERATURE

Eng. 1, 2. Composition and American Literature (3, 3). Eng. 1 is the prerequisite of Eng. 2.

Grammar, rhetoric, and the mechanics of writing; frequent themes. Readings will be in American literature.

Eng. 3, 4. Composition and World Literature (3, 3). Prerequisites, Eng. 1, 2. Eng. 3, 4, or Eng. 5, 6, or an acceptable* combination of the two required of sophomores.

Practice in composition. An introduction to world literature, foreign classics being read in translation.

Eng. 5, 6. Composition and English Literature (3, 3). Prerequisite, Eng. 1, 2. Credit will not be given for more than six hours of work in Eng. 3, 4, and 5, 6.

Practice in composition. An introduction to major English writers.

Eng. 7. Technical Writing (2). Prerequisite, Eng. 1, 2.

For students desiring practice in writing reports, technical essays, or popular essays on technical subjects.

Eng. 8. College Grammar (3). Prerequisite, Eng. 1, 2.

An analytical study of Modern English grammar, with lectures on the origin and history of inflectional and derivational forms.

Eng. 12. Introduction to Creative Writing (2). Prerequisite, Eng. 1, 2. Intended primarily for sophomores and juniors of demonstrated ability.

Eng. 14. Expository Writing (3). Prerequisite, Eng. 1, 2. Credit will not be given for Eng. 7 in addition to Eng. 14.

Methods and problems of exposition; practice in several kinds of informative writing, including the preparation of technical papers and reports. Not offered on the College Park campus.

* In practice this means one first semester course and one second semester course. Combination 3-6 or 4-5 is acceptable. 3-5 or 4-6 is not.

Eng. 115, 116. Shakespeare (3, 3).

Twenty-one important plays.

Eng. 140. The English Novel (3).

English novels of the nineteenth century.

Eng. 144. Modern Drama (3).

The drama from Ibsen to the present.

Eng. 145. The Modern Novel (3).

Major English and American novelists of the twentieth century.

Eng. 148. The Literature of American Democracy (3).

Literature which relates closely to the democratic tradition.

Eng. 150, 151. American Literature (3, 3).

Representative American poetry and prose from colonial times to the present, with special emphasis on the literature of the nineteenth century.

Eng. 155, 156. Major American Writers (3, 3).

Two writers studied intensively each semester.

Eng. 157. Introduction to Folklore (3).

Historical background of folklore studies; types of folklore with particular emphasis on folktales and folksongs, and on American folklore.

Eng. 170. Creative Writing (2). Prerequisite, permission of the instructor.

Eng. 171. Advanced Creative Writing (2). Prerequisite, permission of the instructor.

GEOGRAPHY

Geog. 10. General Geography (3).

Introduction to geography as a field of study. A survey of the content, philosophy, techniques, and application of geography and its significance for the understanding of world problems.

Geog. 20, 21. Economic Geography (3, 3). Cannot be taken for credit by students who have had Geog. 1 and 2 or 60 and 61.

Study of the nature and geographic distribution of the world's resources, its agricultural, mineral, and other industries in relation to such basic factors as land forms, climates, population centers, and trade routes.

Geog. 30. Principles of Morphology (3).

A study of the physical features of the earth's surface and their geographic distribution, including subordinate land forms. Major morphological processes, the development and land forms, and the relationships between various types of land forms and land use problems.

Geog. 35. Map Interpretation and Map Problems (3).

Interpretation of landforms and man-made features on American and foreign maps. Functions, use, and limitations of various types of maps, with emphasis upon topographic maps. Problems of use and interpretations.

Geog. 40. Principles of Meteorology (3).

An introductory study of the weather. Properties and conditions of the atmosphere, and methods of measurement. The atmospheric circulation and conditions responsible for various types of weather and their geographic distribution patterns. Practical applications.

Geog. 41. Introductory Climatology (3). Prerequisite Geog. 40, or permission of the instructor.

Climatic elements and their controls, the classification and distribution of world climates, and relevance of climatic differences to human activities.

Geog. 100. Regional Geography of Eastern Anglo-America (3). Prerequisite, Geog. 1, 2 or Geog. 10, or permission of the instructor.

A study of the cultural and economic geography and the geographic regions of Eastern United States and Canada, including an analysis of the significance of the physical basis for present-day diversification of development, and the historical geographic background.

Geog. 101. Regional Geography of Western Anglo-America (3). Prerequisite, Geog. 1, 2 or Geog. 10, or permission of the instructor.

A study of Western United States, Western Canada and Alaska along the lines mentioned under Geog. 100.

Geog. 103. Geographic Concepts and Source Materials (2).

A comprehensive and systematic survey of geographic concepts designed exclusively for teachers. Stress will be placed upon the philosophy of geography in relation to the social and physical sciences, the use of the primary tools of geography, source materials, and the problems of presenting geographic principles.

Geog. 104. Geography of Major World Regions (2).

A geographic analysis of the patterns, problems, and prospects of the world's principal human-geographic regions, including Europe, Anglo-America, the Soviet Union, the Far East, and Latin America. Emphasis upon the causal factors of differentiation and the role geographic differences play in the interpretation of the current world scene. This course is designed especially for teachers.

Geog. 105. Geography of Maryland and Adjacent Areas (3). Prerequisite, permission of the instructor.

An analysis of the physical environment, natural resources, and population in relation to agriculture, industry, transport, and trade in the State of Maryland and adjacent areas.

Geog. 120. Economic Geography of Europe (3).

The natural resources of Europe in relation to agricultural and industrial development and to present-day economic and national problems.

Geog. 130, 131. Economic and Political Geography of Southern and Eastern Asia (3, 3).

A study of China, Japan, India, Burma, Indo-China and Indonesia; natural resources, population, and economic activities. Comparisons of physical and human potentialities of major regions and of the economic, social, and political development.

Geog. 134, 135. Cultural Geography of East Asia (3, 3).

A comprehensive and systematic survey of the geographical distribution and interpretation of the major racial groups and cultural patterns of China, Japan, and Korea. Special emphasis will be placed on the unique characteristics of the peoples of these areas, their basic cultural institutions, outlooks on life, contemporary problems, and

trends of cultural change. Designed especially for students of the social sciences, and those preparing for careers in foreign service, foreign trade, education, and international relations.

Geog. 140. Soviet Lands (3).

The natural environment and its regional diversity. Geographic factors in the expansion of the Russian State. The geography of agricultural and industrial production, in relation to available resources, transportation problems, and diversity of population.

Geog. 150. History and Theory of Cartography (3).

The development of maps throughout history. Geographical orientation, coordinates, and map scales. Map projections, their nature, use, and limitations. Principles of representation of features on physical and cultural maps. Modern uses of maps and relationships between characteristics of maps and use types.

Geog. 155. Problems and Practices of Photo Interpretation (3).

Interpretation of aerial photographs with emphasis on the recognition of landforms of different types and man-made features. Study of vegetation, soil, and other data that may be derived from aerial photographs. Types of aerial photographs and limitations of photo interpretation.

Geog. 190. Political Geography (3).

Geographical factors in national power and international relations; an analysis of the role of "Geopolitics" and "Geostrategy," with special reference to the current world scene.

GOVERNMENT AND POLITICS

G. & P. 1. American Government (3).

This course is designed as the basic course in government for the American Civilization program, and it or its equivalent is a prerequisite to all other courses in the Department. It is a comprehensive study of governments in the United States—national, state, and local.

G. & P. 4. State Government and Administration (3). Prerequisite, G. and P. 1.

A study of the organization and functions of state government in the United States, with special emphasis upon the government of Maryland.

G. & P. 5. Local Government and Administration (3). Prerequisite, G. and P. 1.

A study of the organization and functions of local government in the United States, with special emphasis upon the government of Maryland cities and counties.

G. & P. 11. The Government and Administration of the Soviet Union (3). Prerequisite, G. and P. 1.

A Study of the adoption of the Communist philosophy by the Soviet Union, of its governmental structure, and of the administration of government policy in the Soviet Union.

G. & P. 97. Major Foreign Governments (3). Prerequisite, G. and P. 1.

An examination of characteristic governmental institutions and political processes in selected major powers, such as Britain, Russia, France, Germany, Italy, Japan, and China. Students may not receive credit in this course and also obtain credit in G. & P. 7, 8, or 10.

G. & P. 101. International Political Relations (3). Prerequisite, G. & P. 1.

A study of the major factors underlying international relations, the influence of geography, climate, nationalism, and imperialism, and the development of foreign policies of the major powers.

G. & P. 102. International Law (3). Prerequisite, G. & P. 1.

Fundamental principles governing the relations of states, including matters of jurisdiction over landed territory, water, airspace, and persons; treatment of aliens; treaty-making; diplomacy; and the laws of war and neutrality.

G. & P. 104. Inter-American Relations (3). Prerequisite, G. & P. 1.

An analytical and historical study of the Latin-American policies of the United States and of problems in our relations with individual countries, with emphasis on recent developments.

G. & P. 105. Recent Far Eastern Politics (3). Prerequisite, G. & P. 1.

The background and interpretation of recent political events in the Far East and their influence on world politics.

G. & P. 106. American Foreign Relations (3). Prerequisite, G. & P. 1.

The principles and machinery of the conduct of American foreign relations, with emphasis on the Department of State and the Foreign Service, and an analysis of the major foreign policies of the United States.

G. & P. 108. International Organization (3). Prerequisite, G. and P. 1.

A study of the objectives, structure, functions, and procedures of international organizations, including the United Nations as well as functional and regional organizations such as the Organization of American States.

G. & P. 110. Principles of Public Administration (3). Prerequisite, G. & P. 1.

A study of public administration in the United States, giving special attention to the principles of organization and management and to fiscal, personnel, planning, and public relations practices.

G. & P. 111. Public Personnel Administration (3). Prerequisite, G. & P. 110 or B. A. 160.

A survey of public personnel administration, including the development of merit civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee relations and retirement.

G. & P. 112. Public Financial Administration (3). Prerequisite, G. & P. 110 or Econ. 142.

A survey of governmental financial procedures including processes of current and capital budgeting, the administration of public borrowing, the techniques of public purchasing, and the machinery of control through pre-audit and post-audit.

G. & P. 124. Legislatures and Legislation (3). Prerequisite, G. & P. 1.

A comprehensive study of legislative organization, procedure, and problems.

G. & P. 131, 132. Constitutional Law (3, 3). Prerequisite, G. & P. 1.

A systematic inquiry into the general principles of the American constitutional system, with special reference to the role of the judiciary in the interpretation and enforcement of the federal constitution; the position of the states in the federal system; state and federal powers over commerce; due process of law and other civil rights.

G. & P. 133. Administration of Justice (3). Prerequisite, G. & P. 1.

An examination of civil and criminal court structure and procedures in the United States at all levels of government, with special emphasis upon the federal judiciary.

G. & P. 141. History of Political Theory (3). Prerequisite, G. & P. 1.

A survey of the principal political theories set forth in the works of writers from Plato to Bentham.

G. & P. 142. Recent Political Theory (3). Prerequisite, G. & P. 1.

A study of nineteenth and twentieth century political thought, with special emphasis on recent theories of socialism, communism, and fascism.

G. & P. 144. American Political Theory (3). Prerequisite, G. & P. 1.

A study of the development and growth of American political concepts from the colonial period to the present.

G. & P. 154. Problems of World Politics (3). Prerequisite, G. & P. 1.

A study of governmental problems of international scope such as causes of war, problems of neutrality, and propaganda. Students are required to report on readings from current literature.

G. & P. 174. Political Parties (3). Prerequisite, G. & P. 1.

A descriptive and analytical examination of American political parties, nominations, elections, and political leadership.

G. & P. 178. Public Opinion (3). Prerequisite, G. & P. 1.

An examination of public opinion and its effect on political action, with emphasis on opinion formation and measurement, propaganda, and pressure groups.

G. & P. 181. Administrative Law (3). Prerequisite, G. & P. 1.

A study of the discretion exercised by administrative agencies, including analysis of their functions, their powers over persons and property, their procedures, and judicial sanctions and controls.

G. & P. 197. Comparative Governmental Institutions (3). Prerequisite, G. and P. 1.

A study of major political institutions, such as legislatures, executives, courts, administrative systems, and political parties, in selected foreign governments.

FOR GRADUATES

G. & P. 201. Seminar in International Political Organization (3).

A study of the forms and functions of various international organizations.

G. & P. 202. Seminar in International Law (3).

Reports on selected topics assigned for individual study and reading in substantive and procedural international law.

G. & P. 205. Seminar in American Political Institutions (3).

Reports on topics assigned for individual study and reading in the background and development of American government.

G. & P. 206. Seminar in American Foreign Relations (3).

Reports on selected topics assigned for individual study and reading in American foreign policy and the conduct of American foreign relations.

G. & P. 207. Seminar in Comparative Governmental Institutions (3).

Reports on selected topics assigned for individual study and reading in governmental and political institutions in governments throughout the world.

G. & P. 211. Seminar in Federal-State Relations (3).

Reports on topics assigned for individual study and reading in the field of recent federal-state relations.

G. & P. 213. Problems of Public Administration (3).

Reports on topics assigned for individual study and reading in the field of public administration.

G. & P. 221. Seminar in Public Opinion (3).

Reports on topics assigned for individual study and reading in the field of public opinion.

G. & P. 223. Seminar in Legislatures and Legislation (3).

Reports on topics assigned for individual study and reading about the composition and organization of legislatures and about the legislative process.

G. & P. 224. Seminar in Political Parties and Politics (3).

Reports on topics assigned for individual study and reading in the fields of political organization and action.

G. & P. 225. Man and the State (3).

Individual reading and reports on such recurring concepts in political theory as liberty, equality, justice, natural law and natural rights, private property, sovereignty, nationalism, and the organic state.

G. & P. 231. Seminar in Public Law (3).

Reports on topics assigned for individual study and reading in the fields of constitutional and administrative law.

G. & P. 251. Bibliography of Government and Politics (3).

Survey of the literature of the various fields of government and politics and instruction in the use of government documents.

G. & P. 261. Problems of Government and Politics (3).

Credit according to work accomplished.

G. & P. 299. Thesis Course. (Arranged).

HEALTH

In addition to the Health courses listed below consult the College of Physical Education, Recreation and Health catalog for graduate level courses in the Health field.

For Advanced Undergraduates and Graduates

Hea. 160. Problems in School Health Education in Elementary and Secondary Schools (2-6).

This is a workshop type course designed particularly for in-service teachers to acquaint them with the best methods of providing good health services, healthful environment and health instruction.

Hea. 170. The Health Program in the Elementary School (3). Prerequisites, Hea. 2 and 4 or Hea. 40.

This course, designed for the elementary school classroom teacher, analyzes biological, sociological, nutritional and other factors which determine the health status and needs of the individual elementary school child. The various aspects of the school program are evaluated in terms of their role in health education.

The total school health program is surveyed from the standpoint of organization and administration, and health appraisal. Emphasis is placed upon modern methods and current materials in health instruction. (The State Department of Education accepts this course for biological science credit.)

Hea. 189. Field Laboratory Projects and Workshops (1-6).

A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P.E., Rec., Hea., or Ed. 189 is six.

HISTORY

H. 1, 2. History of Modern Europe (3, 3).

The basic course, prerequisite, for all advanced courses in European History. A study of European history from the Renaissance to the present day.

H. 5, 6. History of American Civilization (3, 3). Required for graduation of all students who enter the University after 1944-45. Normally to be taken in the sophomore year.

H. 53, 54. History of England and Great Britain (3, 3).

A history of the development of British life and institutions. Open to all classes. Especially recommended for English majors and minors. First semester to 1485. Second semester, since 1485.

H. 101. American Colonial History (3). Prerequisites, H. 5, 6, or the equivalent.

The settlement and development of colonial America to the middle of the eighteenth century.

H. 102. The American Revolution (3). Prerequisites, H. 5, 6, or the equivalent.

The background and course of the American Revolution through the formation of the Constitution.

H. 105. Social and Economic History of the United States to 1865 (3). Prerequisites, H. 5, 6, or the equivalent.

A synthesis of American Life from its independence through the Civil War.

H. 106. Social and Economic History of the United States since the Civil War (3). Prerequisites, H. 5, 6, or the equivalent.

The development of American life and institutions, with emphasis upon the period since 1876.

H. 115. The Old South (3). Prerequisites, H. 5, 6, or the equivalent.

A study of the institutional and cultural life of the ante-bellum South with particular reference to the background of the Civil War.

H. 116. The Civil War (3). Prerequisites, H. 5, 6, or the equivalent.

Military aspects; problems of the Confederacy, political, social, and economic effects of the war upon American society.

H. 118, 119. Recent American History (3, 3). Prerequisites, H. 5, 6, or the equivalent.

Party politics, domestic issues, foreign relations of the United States since 1890. First semester, through World War I. Second semester, since World War I.

H. 127, 128. Diplomatic History of the United States (3, 3)—Prerequisites, H. 5, 6, or the equivalent.

A historical study of the diplomatic negotiations and foreign relations of the United States. First semester, from the Revolution to the Civil War; second semester, from the Civil War to the present.

H. 129. The United States and World Affairs (3)—Prerequisites, H. 5, 6, or the equivalent.

A consideration of the changed position of the United States with reference to the rest of the world since 1917.

H. 141, 142. History of Maryland (3, 3). Prerequisites, H. 5, 6, or the equivalent.

First semester, a survey of the political, social and economic history of colonial Maryland. Second semester, Maryland's historical development and role as a state in the American Union.

H. 145, 146. Latin-American History (3, 3). Prerequisites, H. 1 and 2 or H. 5 and 6 or equivalent.

A survey of the history of Latin America from colonial origins to the present, covering political, cultural, economic, and social development, with special emphasis upon relations with the United States. First semester, Colonial Latin America. Second semester, the Republics.

H. 171, 172. Europe in the Nineteenth Century, 1815-1919 (3, 3). Prerequisites, H. 1, 2, or H. 53, 54.

A study of the political, economic, social and cultural development of Europe from the Congress of Vienna to the First World War.

H. 175, 176. Europe in the World Setting of the Twentieth Century (3, 3). Prerequisites, H. 1, 2, or H. 3, 4.

A study of political, economic, and cultural developments in twentieth century Europe with special emphasis on the factors involved in the two World Wars and their global impacts and significance.

H. 186. History of the British Empire (3). Prerequisites, H. 1, 2, or H. 53, 54.

The rise of the Second British Empire and the solution of the problem of responsible self-government, 1783-1867; the evolution of the British Empire into a Commonwealth of nations, and the development and problems of the dependent Empire.

H. 191. History of Russia (3). Prerequisites, H. 1, 2, or the equivalent.

A history of Russia from the earliest times to the present day.

H. 192. Foreign Policy of the USSR (3). Prerequisite, H. 191.

A survey of Russian foreign policy in the historical perspective, with special emphasis on the period of the USSR. Russian aims, expansion, and conflicts with the western powers in Europe, the Near and Middle East, and the Far East will be studied.

H. 195. The Far East (3).

A survey of the institutional, cultural and political aspects of the history of China and Japan, and a consideration of present-day problems of the Pacific area.

H. 196. Southeast Asia (3).

The political, economic, and cultural history of the new nations of Southeast Asia, with emphasis on the colonial period and a view to understanding contemporary developments.

H. 200. Research (1-6).

Credit proportioned to amount of work.

H. 201. Seminar in American History (3).

H. 250. Seminar in European History (3).

H. 282. Problems in the History of World War II (3).

Investigation of various aspects of the Second World War, including military operations, diplomatic phases, and political and economic problems of the war and its aftermath.

H. 287. Historiography (3).

Readings and occasional lectures on the historical writing, the evolution of critical standards, the rise of auxiliary sciences, and the works of selected masters.

HUMAN DEVELOPMENT EDUCATION

H. D. Ed. 102, 103, 104. Child Development Laboratory I, II and III (2, 2, 2). Prerequisite, General or Educational Psychology or any course in Human Development.

These courses involve the direct study of children throughout the school year. Each participant gathers a wide body of information about an individual; presents the accumulating data from time to time to the study group for criticism and group analysis, and writes an interpretation of the dynamics underlying the child's learning, behavior and development.

H. D. Ed. 200. Introduction to Human Development and Child Study (3).

This course offers a general overview of the scientific principles which describe human development and behavior and makes use of these principles in the study of individual children. Each student will observe and record the behavior of an individual child throughout the semester and must have one half-day a week free for this purpose. The course is basic to further work in child study and serves as a prerequisite for advanced courses where the student has not had field work or at least six weeks of workshop experience in child study.

H. D. Ed. 201. Biological Bases of Behavior (3).

This course emphasizes that understanding human life, growth and behavior depends on understanding the ways in which the body is able to capture, control and expand energy. Application throughout is made to human body processes and implications for understanding and working with people. H. D. 250 a or b or c must be taken concurrently with this course. (Prerequisite, H. D. Ed. 200.)

H. D. Ed. 202. Social Bases of Behavior (3).

This course analyzes the socially inherited and transmitted patterns of pressures, expectations and limitations learned by an individual as he grows up. These are considered in relation to the patterns of feeling and behaving which emerge as the result of growing up in one's social group. H. D. Ed. 250a or b or c must be taken concurrently with this course. (Prerequisite, H. D. Ed. 200.)

H. D. Ed. 250a, 250b, 250c. Direct Study of Children (1, 1, 1).

This course provides the opportunity to observe and record the behavior of an individual child in a nearby school. These records will be used in conjunction with the advanced courses in Human Development and this course will be taken concurrently with such courses. Teachers active in their jobs while taking advanced courses in Human Development may use records from their own classrooms for this course. May not be taken concurrently with H. D. Ed. 102, 103, 104, or H. D. Ed. 200.

H. D. Ed. 270. Seminars in Special Topics in Human Development (2-6).

An opportunity for advanced students to focus in depth on topics of special interest growing out of their basic courses in human development. Prerequisites, consent of the instructor.

INDUSTRIAL EDUCATION

(The courses below do not constitute a complete listing of Industrial Education offerings but are the courses currently offered at off-campus centers).

Ind. Ed. 28. Electricity I (2).

An introductory course to electricity in general. It deals with the electrical circuit, elementary wiring problems, the measurement of electrical energy, and a brief treatment of radio. Laboratory fee, \$5.00.

Ind. Ed. 48. Electricity II (2).

Principles involved in A-C and D-C electrical equipment, including heating measurements, motors and control, electro-chemistry, the electric arc, inductance and reactance, condensers, radio, and electronics. Laboratory fee, \$5.00.

Ind. Ed. 50. Methods of Teaching (2).

For vocational and occupational teachers of shop and related subjects. The identification and analysis of factors essential to helping others learn; types of teaching situations and techniques; the use of instructional aids; measuring results and grading student progress in shop and related technical subjects.

Ind. Ed. 60. Observation and Demonstration Teaching (2). (Offered in Baltimore only.)

Prerequisite, Educational Psychology and/or Methods of Teaching Vocational and Occupational Subjects.

Primarily for vocational and occupational teachers. Sixteen hours of directed observation and demonstration teaching. Reports, conferences, and critiques constitute the remainder of scheduled activities in this course.

Ind. Ed. 124 a, b. Organized and Supervised Work Experience (3 credits for each internship period, total: 6 credits).

This is a work experience sequence planned for students enrolled in the curriculum, "Education for Industry". The purpose is to provide the students with opportunities for first-hand experiences with business and industry. The student is responsible for obtaining his own employment with the coordinator advising him as regards the job opportunities which have optimum learning value.

The nature of the work experience desired is outlined at the outset of employment and the evaluations made by the student and the coordinator are based upon the planned experiences.

The time basis for each internship period is 6 forty-hour weeks or 240 work hours. Any one period of internship must be served through continuous employment in a single establishment. Two internship periods are required. The two internships may be served with the same business or industry.

The completion for credit of any period of internship requires the employer's recommendation in terms of satisfactory work and work attitudes.

More complete details are found in the handbook prepared for the student of this curriculum.

Ind. Ed. 143. Industrial Safety Education I (2).

This course deals briefly with the history and development of effective safety programs in modern industry and treats causes, effects, and values of industrial safety education inclusive of fire prevention and hazard controls.

Ind. Ed. 144. Industrial Safety Education II (2).

This course presents exemplary safety practices through conference discussions, group demonstrations, and organized plant visits to selected industrial situations. Methods of fire precautions and safety practices are emphasized. Evaluative criteria in safety programs are formulated.

Ind. Ed. 145, 146. Industrial Hygiene Education (2, 2).

Ind. Ed. 145 deals with the theory and Ind. Ed. 146 with the practices of the following: Organization of plant medical department; medical services in industry; prevention and control of occupational disease; control of air contamination; the venereal disease problem in industry; fatigue; nutrition; sanitation; illumination; noise, radiant energy; heating and ventilation; maximum use of manpower; absenteeism.

Ind. Ed. 150. Training Aids Development (2).

Study of the aids in common use as to their source and application. Special emphasis is placed on principles to be observed in making aids useful to shop teachers. Actual construction and application of such aids will be required.

Ind. Ed. 161. Principles of Vocational Guidance (2).

This course identifies and applies the underlying principles of guidance to the problems of educational and vocational adjustment of students.

Ind. Ed. 164. Shop Organization and Management (2).

This course covers the basic elements of organizing and managing an Industrial Education program including the selection of equipment and the arrangement of the shop.

Ind. Ed. 167. Problems in Occupational Education (2).

The purpose of this course is to obtain, assemble, organize, and interpret data relative to the scope, character and effectiveness of occupational education.

Ind. Ed. 168. Trade or Occupational Analysis (2).

Provides a working knowledge of occupational and job analysis which is basic in organizing vocational-industrial instruction. This course should precede Ind. Ed. 169.

Ind. Ed. 169. Course Construction (2).

Surveys and applies techniques of building and reorganizing course materials for effective use in vocational and occupational schools.

Ind. Ed. 170. Principles of Vocational Education (2).

The course develops the Vocational Education movement as an integral phase of the American program of public education.

Ind. Ed. 171. History of Vocational Education (2).

An overview of the development of Vocational Education from primitive times to the present.

FOR GRADUATES**Ind. Ed. 207. Philosophy of Industrial Arts Education (2).**

This course is intended to assist the student in his development of a point of view as regards Industrial Arts and its relationship with the total educational program. He should, thereby, have a "yardstick" for appraising current procedures and proposals and an articulateness for his own professional area.

Ind. Ed. 214. School Shop Planning and Equipment Selection (2).

This course deals with principles involved in planning a school shop and provides opportunities for applying these principles. Facilities required in the operation of a satisfactory shop program are catalogued and appraised.

Ind. Ed. 220. Organization, Administration and Supervision of Vocational Education (2).

This course surveys objectively the organization, administration, supervision, curricular spread and viewpoint, and the present status of vocational education.

Ind. Ed. 240. Research in Industrial Arts and Vocational Education (2).

This is a course offered by arrangement for persons who are conducting research in the areas of Industrial Arts and Vocational Education.

Ind. Ed. 241. Content and Method of Industrial Arts (2).

Various methods and procedures used in curriculum development are examined and those suited to the field of Industrial Arts education are applied. Methods of and devices for Industrial Arts instruction are studied and practiced.

Ind. Ed. 248. Seminar in Industrial Arts and Vocational Education (2).**JOURNALISM AND PUBLIC RELATIONS****Jour. 165. Feature Writing (3).**

Writing and selling of magazine and newspaper feature articles.

P. R. 166. Public Relations (3).

Survey of public relations; general orientation, principles and techniques.

P. R. 170. Publicity Techniques (3).

Strategy and techniques of publicity. Orientation and practice in the use of major media of public communication.

LANGUAGES AND LITERATURE, FOREIGN

A student who offers two units of a foreign language from high school will not receive credit in college for the first semester of the introductory course in that language.

French**French 1, 2. Elementary French (3, 3).**

Elements of grammar; pronunciation and conversation; exercises in composition and translation.

French 4, 5. Intermediate Literary French (3, 3). Prerequisite, French 1 and 2 or equivalent.

Reading of texts designed to give some knowledge of French life, thought, and culture.

French 80, 81. Advanced Conversation (3, 3). Prerequisite, consent of the instructor.

For students who wish to develop fluency and confidence in speaking the language.

French 161, 162. French Civilization (3, 3).

French life, customs, culture, traditions.

German**German 1, 2. Elementary German (3, 3).**

Elements of grammar; pronunciation and conversation; exercises in composition and translation.

German 4, 5. Intermediate Literary German (3, 3). Prerequisite, German 1, 2, or equivalent.

Reading of narrative prose designed to give some knowledge of German life, thought, and culture.

German 161, 162. German Civilization (3, 3).

A survey of two thousand years of German history, outlining the cultural heritage of the German people, their great men, tradition, customs, art and literature, with special emphasis on the interrelationship of social and literary history.

Norwegian 1, 2. Elementary Norwegian (3, 3). Offered in European Program only.

Elements of grammar; pronunciation and conversation; exercises in composition and translation.

Russian

Russian 1, 2. Elementary Russian (3, 3).

Elements of grammar; composition; pronunciation and translation.

Russian 3. Elementary Conversation (1). Open to all students who have completed their first-year Russian or Russian 1 with the grade A or B.

A practice course in simple spoken Russian.

Russian 4, 5. Intermediate Russian (3, 3). Prerequisite, Russian 1 and 2, or equivalent.

Reading of texts designed to give some knowledge of Russian life, thought, and culture.

Russian 8, 9. Intermediate Conversation (2, 2). Admission by consent of instructor.

An intermediate practice course in spoken Russian.

Spanish

Spanish 1, 2. Elementary Spanish (3, 3). Elements of grammar; pronunciation and conversation; exercises in composition and translation.

Spanish 4, 5. Intermediate Spanish (3, 3). Prerequisite, Spanish 1, 2 or equivalent.

Reading of texts designed to give some knowledge of Spanish and Latin-American life, thought, and culture.

Spanish 251, 252. Seminar (3, 3). Required of all graduate majors in Spanish.

Italian

Italian 1, 2. Elementary Italian (3, 3). Also recommended to advanced students in French and Spanish. Offered in European Program only.

Elements of grammar; pronunciation; exercises in translation.

Italian 3. Elementary Conversation (1). Prerequisite, Italian 1 and consent of instructor. Offered in European Program only.

A practice course in simple Italian.

Arabic

Arabic 1, 2. Modern Arabic (3, 3). Offered in European Program only.

Introduction to grammar, translation, and conversation.

MATHEMATICS

In general, students should enroll in only one of the course sequences, Math. 5, 10-11, 18-19. In case this rule is not followed, proper assignment of credit will be made upon application to the Department of Mathematics. The following are listed as typical situations:

Math. 5, 10, 18. Credit in only one course: the one enrolled in latest.

Math. 11, 18, Math. 11—1 credit; Math. 18—5 credits.

Math. 5. General Mathematics (3). Prerequisite, one unit of algebra. Open only to students in the College of Business and Public Administration, the College of Agriculture, College of Military Science, and the Department of Industrial Education. Note regulation above in case student enrolls in more than one of the courses, Math. 5, 10, 18.

Fundamental operations, fractions, ratio and proportion, linear equations, exponents, logarithms, percentage, trade discount, simple interest, bank discount, true discount, and promissory notes.

Math. 6. Mathematics of Finance (3). Prerequisite, Math. 5 or equivalent. Required of students in the College of Business and Public Administration, and open to students in the College of Arts and Sciences only for elective credit.

Line diagrams, compound interest, simple interest, ordinary annuities, general annuities, deferred annuities, annuities due, perpetuities, evaluation of bonds, amortization, and sinking funds.

Math. 10. Algebra (3). Prerequisite, one unit each of algebra and plane geometry. Open to biological, premedical, pre dental, College of Military Science, and general Arts and Science students. Note regulation above, in case student enrolls in more than one of the courses, Math. 5, 10, 18.

Fundamental operations, factoring, fractions, linear equations, exponents and radicals, quadratic equations, progressions, logarithms, permutations and combinations, probability and mathematics of investment.

Math. 11. Trigonometry and Analytic Geometry (3). Prerequisite, Math. 10 or equivalent. Open to biological, premedical, pre dental, College of Military Science and general Arts and Science students. This course is not recommended for students planning to enroll in Math. 20. Note regulation above, in case student enrolls in more than one sequence, Math. 10-11, 18-19.

Trigonometric functions, identities, addition formulas, solution of triangles, coordinates, locus problems, the straight line and circle, conic sections, and graphs.

Math. 13. Elements of Mathematical Statistics (3). Prerequisite, Math. 10 or equivalent.

Frequency distributions, averages, moments, measures of dispersion, the normal curve, curve fitting, regression and correlation.

Math. 18, 19. Elementary Mathematical Analysis (5, 5). Prerequisites, high school algebra completed and plane geometry. Open to students in the sciences, engineering, education. Note regulation above, in case student enrolls in more than one of the course sequences, Math. 5, 10-11, 18-19.

The elementary mathematical functions, composed of algebraic, exponential, trigonometric types and their inverses, are studied by means of their properties, their graphical representations, the identities interconnecting them, the solution of equations involving them. The beginning techniques of calculus and a full discussion of solid analytic geometry are included. Other material may be selected from such topics as permutations, combinations, probability, statistics, determinants, vectors, and matrices.

Math. 110, 111. Advanced Calculus (3, 3). Prerequisite, Math. 21, or equivalent.

Limits and continuity of real and complex functions, Riemann integration, partial differentiation, line and surface integrals, infinite series, elements of vector analysis and of complex variable theory. Emphasis on problems and techniques.

Math. 114. Differential Equations (3). Prerequisite, Math. 110 or equivalent.

Ordinary differential equations, symbolic methods, successive approximations, solutions in series, orthogonal functions, Bessel functions, Sturmian theory.

Math. 115. Partial Differential Equations (3). Prerequisite, Math. 114.

Partial differential equations of first and second order, characteristics, boundary value problems, systems of equations, applications.

Math. 116. Introduction to Complex Variable Theory (3). Prerequisite, Math. 21 or equivalent. Open to students of engineering and the physical sciences. Graduate students of mathematics should enroll in Math. 286.

Fundamental operations in complex numbers, differentiation and integration, sequences and series, power series, analytic functions, conformal mapping, residue theory, special functions.

Math. 117. Fourier Series (3). Prerequisite, Math. 21 or equivalent.

Representation of functions by series of orthogonal functions. Applications to the solution of boundary value problems of some partial differential equations of physics and engineering.

Math. 126, 127. Introduction to Differential Geometry and Tensor Analysis (3, 3). Prerequisite, Math. 21 or equivalent.

The differential geometry of curves and surfaces with the use of vector and tensor methods, curvature and torsion, moving frames, curvilinear coordinates, the fundamental differential forms, covariant derivatives, intrinsic geometry, curves on a surface, applications to problems in dynamics, mechanics, electricity, and relativity.

Math. 130. Probability (3). Prerequisite, Math. 21 or equivalent.

Combinatory analysis, total, compound and inverse probability, continuous distributions, theorems of Bernoulli and Laplace, theory of errors.

Math. 132. Mathematical Statistics (3). Prerequisite, Math. 21 or equivalent.

Frequency distributions and their parameters, multivariate analysis and correlation, theory of sampling, analysis of variance, statistical inference.

Math. 133. Advanced Statistical Analysis (3). Prerequisite, Math. 132 or equivalent.

Advanced methods in correlation analysis, regression analysis, analysis of variance, and sequential analysis, curve fitting, testing of hypotheses, non-parametric testing, machine tabulation in statistics.

Math. 150, 151. Advanced Mathematics for Engineers and Physicists (3, 3). Prerequisite, Math. 21 or equivalent.

An introduction to advanced mathematical methods and their application to the technical problems of physics and engineering. Topics include Fourier series, matrices, ordinary and partial differential equations of applied mathematics, numerical methods, Bessel functions, complex variables, operational calculus.

Math. 152. Vector Analysis (3). Prerequisite, Math. 21 or equivalent.

Algebra and calculus of vectors and applications.

Math. 153. Operational Calculus (3). Prerequisite, Math. 21 or equivalent.

Operational solutions of ordinary and partial differential equations, Fourier and Laplace transforms.

Math. 155. Numerical Analysis (3). Prerequisite, Math. 110 and 114, or consent of instructor.

A brief survey of computing machines, study of errors involved in numerical computations, the use of desk machines and tables, numerical solution of polynomial and transcendental equations, interpolation, numerical differentiation and integration, ordinary differential equations, systems of linear equations.

Math. 156. Programming for High Speed Computers (3). Prerequisite, Math. 21 or equivalent.

General characteristics of high-speed automatic computers; logic of programming, preparation of flow charts, preliminary and final coding; scaling, use of floating point routines, construction and use of subroutines; use of machine for mathematical operations and for automatic coding. Each student will prepare and, if possible, run a problem in a high speed computer.

MECHANICAL ENGINEERING

For Graduates

M. E. 200, 201. Advanced Dynamics (3, 3). Prerequisites, Mech. 52; Math. 64; M. E. 107; M. E. 109.

Mechanics of machinery. Dynamic forces. Balancing of rotating parts. Vibrations and vibration damping. Critical speeds.

M. E. 202, 203. Applied Elasticity (3, 3). Prerequisite, Mech. 52; Math. 64; M. E. 107.

Advanced methods in structural and experimental stress analysis. Advanced strength of materials involving beam problems, curved bars, thin plates and shells, buckling of bars, plates and shells, etc. Advanced work in stress concentrations, plastic deformations, etc., and problems involving instability of structures.

M. E. 204, 205. Advanced Thermodynamics (3, 3). Prerequisites, M. E. 101, 104, 105; Math. 64.

Advanced problems in thermodynamics on compression of gases and liquids, combustion and equilibrium, humidification and refrigeration and availability. Problems in advanced heat transfer covering the effect of radiation, conduction, and convection, steady and unsteady flow, evaporation and condensation.

M. E. 206, 207. Advanced Machine Design (3, 3). Two lectures and one laboratory period a week. Prerequisites, Math. 64, M. E. 107.

Application of advanced methods of stress analysis to design of special stationary and moving machine parts, including rotating disks, bearings, thick wall cylinders, screw fastenings, crankshafts, etc. Application of linear and torsional vibration and balancing in the design of machine members. Complete design of a machine. Study of current design literature.

M. E. 208, 209. Steam Power Plant Design (3, 3). One lecture and two laboratory periods a week. Prerequisite, M. E. 105.

Design and specifications of power plants with special emphasis on central stations heated by conventional fuels and nuclear reactors. Design of all components including turbines, boilers, and reactors. Problems of water treatment and waste disposal (atomic and ash) are considered.

M. E. 210, 211. Advanced Fluid Mechanics (3, 3). Prerequisites, M. E. 54, Math. 64.

Advanced theory of the flow of fluids and gases. Hydrodynamic theory. Engineering applications.

M. E. 212, 213. Advanced Steam Power Laboratory (2, 2). One lecture and one laboratory period a week. Prerequisite, registration in M. E. 204, 205.

Research on advanced steam power problems to illustrate and advance steam power theory. Power plant heat balances.

M. E. 214, 215. Advanced Applied Mechanics Laboratory (2, 2). One lecture and one laboratory period a week. Prerequisites, registration in M. E. 200, 201 and M. E. 202, 203.

Illustrative experiments and research on difficult problems in stress analysis. Photoelasticity. Mechanical vibrations, Critical speeds, Dynamic stresses. Fatigue of materials.

M. E. 216, 217. Advanced Internal Combustion Engine Design (3, 3). One lecture and two laboratory periods a week. Prerequisites, M. E. 104, 105; M. E. 106, 107 and registration in M. E. 200, and M. E. 204, 205.

Each student will carry out complete designs of internal combustion engines.

M. E. 218, 219. Advanced Internal Combustion Engine Laboratory (2, 2). One lecture and one laboratory period a week. Prerequisite, registration in M. E. 216, 217.

Advanced laboratory tests and problems in the design of internal combustion engines.

M. E. 220. Seminar—Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering.

M. E. 221. Research—Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering.

Research in any field of mechanical engineering as applied mechanics, heat transfer, thermodynamics, heat, power, etc.

M. E. 222. Advanced Metallography (3). Two lectures and one laboratory period a week. Prerequisite, M. E. 53, Mech. 52.

Advanced study of the structure and properties of metals and alloys. Study of the latest developments in ferrous and non-ferrous alloys including stainless steels, high temperature steels, tool steels, aluminum, magnesium and copper alloys. Study of inspection of metals by the use of X-Rays, spectograph, metallograph and magniflux. Review of current literature.

M. E. 223, 224. Steam and Gas Turbine Design (3, 3). Three lectures a week. Prerequisites, M. E. 101, M. E. 104, M. E. 105, Math 64.

Study of nozzles and blades, with application to all types of turbines and compressors based on detailed heat calculations. Design of regenerators and combustors for gas turbines. Applications to jet propulsion. Fundamentals of rocket, pulse jet and ram jet design.

M. E. 225, 226. Advanced Properties of Metals and Alloys (2, 2). Prerequisites, Mech. 52, M. E. 53, 106, M. E. 107.

Properties of metals including Tensile, Impact, Fatigue, Damping Capacity, Hardness, Wear, etc. Fabrication problems and selection of metals and alloys. Service failures. Properties required for nuclear engineering applications. Properties of metals at elevated and extremely low temperatures.

M. E. 227, 228. Theory of Elasticity (3, 3). Prerequisites, Mech. 52, M. E. 53, M. E. 106, M. E. 107, Math. 64, M. E. 202, 203.

Stress and strain at a point. Relation between stresses and strains, general equations of elasticity, plane strain and plane stress, torsion, bending, axially symmetric distribution of stress, plates, thermal stresses, strain energy and approximate methods.

M. E. 229, 230. Jet Propulsion (3, 3). Prerequisites, M. E. 101, M. E. 104, M. E. 105.

Types of thermal jet units. Fluid reaction and propulsive efficiency. Performance of rockets, aerothermodynamics, combustion chemical kinetics, aerodynamics of high-speed air flow. Principles and design of solid and liquid propellant rockets. Design of turbojets and turbojets, ramjets and hydroduct units, including combustion chambers, turbines and compressors.

M. E. 231, 232. Advanced Heat Transfer (3, 3). Three lectures a week. Prerequisites, M. E. 101, M. E. 102 and M. E. 105. Required of graduate students in Mechanical Engineering.

Advanced problems covering effects of radiation, conduction, convection, evaporation and condensation. Study of research literature on heat transfer.

M. E. 233, 234. Compressible Flow (3, 3). First and second semesters. Three lectures a week. Prerequisites, M. E. 210, 211 or equivalent.

One and two dimensional subsonic, transonic, and supersonic flow.

MILITARY SCIENCE

M. S. 151. Military Logistics (3).

A study of logistics, including (a) the principles governing the national economic activities and resources necessary to support the armed forces (b) a study of the principles and fundamentals of the elements of military logistics, including supply maintenance, transportation, hospitalization and evacuation, construction and logistics planning (c) research by the student on a selected phase of logistics.

M. S. 152. Military Leadership (3).

Three one-hour classroom periods. A study of the basic requisites, principles and attributes of good military leadership, including both the practical and psychological approaches to the subject. Individual differences in human behavior and the personal element in successful leadership are stressed.

M. S. 153. Military Policy of the United States (3). Prerequisite, History 5 and 6.

A study of our military history and our military concepts and policies, and their effects upon national objectives, national policies. A continuing analysis of all the factors which influence national policies, particularly military policy; an evaluation of the lessons to be learned from this historical study.

M. S. 154. Management of the Military Establishment (3). Prerequisite, M. S. 152.

A study of the need for intelligent and scientific management of the Armed Forces, including a consideration of the background of modern management, the development of the science of management and the emphasis on post-war management of the military establishment. A detailed evaluation of the current thoughts and philosophies of military management.

MUSIC

Music 16. Music Fundamentals for the Classroom Teacher (3). Music 7 and Music 16 may not both be counted for credit.

The fundamentals of music theory and practice, related to the needs of the classroom and kindergarten teacher, and organized in accord with the six-area concept of musical learning.

Music 70, 71. Harmony (3, 3). Prerequisite, completion of Music 8 with a grade of at least B. Two lectures and two laboratory hours per week.

A review of music theory and a study of harmonic progressions, triads, dominant sevenths and ninths, in root positions and inversions. Altered and mixed chords, modulations, enharmonic intervals. Simple harmonization and original composition.

NURSING

Nurs. 9. Nursing in Child Health (2).

This course is designed to help the student gain an understanding and appreciation of the health needs of the child in relation to his physical, mental, emotional, and social development.

Nurs. 108. Applied Psychology (2).

This educational experience is designed to supplement and implement nurses' basic knowledge of psychology and sociology. Through lectures, discussions, and observations focussed on patient and nurse behavior, nurses can become more aware of the importance of, and can be helped to develop, positive nurse-patient relationship.

Nurs. 153. Public Health (3).

Designed to assist the student in the application of her knowledge in caring for patients and their families in the community. Eight weeks field experience with the Baltimore City Health Department is included.

Nurs. 154. Management of a Nursing Unit (2).

This course considers the elementary principles of administration; and the interrelationship of the various departments of a health agency. It deals with the position of the supervisor, staff nurse and other members of the nursing team. Methods of supervision and evaluation of clinical work are included.

Nurs. 158. Bio-statistics (3).

Purpose is to orient the student in the proper interpretation of observational data, and to evaluate quantitative aspects of medical literature. (For Graduate Nurse Students).

Nurs. 199. Pro-seminar (2).

Integration of scope and trends in nursing as compared with theoretical and practical applications. (For Graduate Nurse Students).

PHILOSOPHY**Phil. 1. Philosophy for Modern Man (3).**

Modern man's quest for understanding of himself and his world, with particular reference to American ideas and ideals.

Phil. 114. Contemporary Movements in Philosophy (3).

A survey of recent and present developments in philosophy. Attention will be given to such thinkers as James, Bergson, Russell, Dewey and Whitehead, and to such movements as Pragmatism, Idealism, Naturalism, Positivism and Existentialism. Particular consideration will be paid to the bearing of these developments on contemporary problems of science, religion and society.

Phil. 120. Oriental Philosophy (3).

A brief survey of Indian and Chinese philosophy. Discussion of Indian thought will center about the Rig-Veda, the Upanishads, the Buddhist philosophers and the chief Hindu systems. Discussion of Chinese thought will center about Confucius, Lao-tse and their disciples, particular attention being given to the development of democratic ideals from Mencius to Sun Yat-sen.

Phil. 123, 124. Philosophies Men Live By (3).

An exploration of the fundamental beliefs which determine what men make of their lives and of the world they live in. Each semester classic statements of these beliefs by great philosophers will be chosen for class discussion on the basis of their significance for the problems confronting modern man.

Phil. 125. The Great Philosophers (3).

A discussion of the ideas of the great Western philosophers, based on readings in their works.

Phil. 130. The Conflict of Ideals in Western Civilization (3).

A critical and constructive philosophical examination of the assumptions, goals, and methods of contemporary democracy, fascism, socialism, and communism, with special attention to the ideological conflict between the United States and Russia.

Phil. 151. Ethics (3).

A critical study of the problems and theories of human conduct aimed at developing such principles of ethical criticism as may be applied to contemporary personal and social problems and to the formulation of an ethical philosophy of life.

Phil. 155. Logic (3).

A critical exposition of deductive logic. The course includes an examination and appraisal of Aristotelian logic and a systematic presentation of the foundations of modern symbolic logic. Consideration is given to the application of the techniques of logic in the organization of knowledge and in scientific method.

PHYSICAL EDUCATION**FOR ADVANCED UNDERGRADUATES****P. E. 120. Physical Education for the Elementary School (3).**

This course is designed to orient the general elementary school classroom teacher to physical education. Principles and practices in elementary school physical education are presented and discussed, and a large variety of appropriate activities are considered and demonstrated from a standpoint of their use and application at the various grade levels.

P. E. 130. Fundamentals of Body Dynamics (3).

This course is designed to acquaint the elementary teacher with the scientific principles applied to fundamental motor skills, posture and body mechanics as they relate to physical growth and development.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

P. E. 160. Theory of Exercise (3). Prerequisites, Zool. 14 and 15, P. E. 100 or the equivalent. (Two lectures and one laboratory per week).

A study of exercise and its physiological and kinesiological bases. Special emphasis is placed upon the application of exercise to the development and maintenance of physical efficiency. Corrective therapy, conditioning for athletics, the effects of exercise and training on the human organism, fatigue, staleness, relaxation, and the nature of athletic injuries are investigated.

P. E. 195. Organization and Administration of Elementary School Physical Education (3). Prerequisite, P. E. 120.

This course considers the procedures which are basic to the satisfactory organization of all phases of the elementary school physical education program. Stress will be placed on the organizational and administrative factors necessary for the successful operation of the program in various types of elementary schools. Strong emphasis will be placed on organization and administration from a standpoint of adapting the program to specific situations.

P. E. 196. Quantitative Methods (3).

A course covering the statistical techniques most frequently used in research pertaining to physical education, recreation, and health education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

For Graduates

P. E. 200. Seminar in Physical Education, Recreation, and Health (1).

P. E. 201. Foundations in Physical Education, Recreation, and Health (3).

A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

P. E. 210. Methods and Techniques of Research (3).

A study of methods and techniques of research used in physical education, recreation, and health education: an analysis of examples of their use; and practice in their application to problems of interest to the student.

P. E. 250. Mental and Emotional Aspects of Physical Education Activities (3). Prerequisites, Psych. 1, or H. D. Ed. 100, 101, or equivalents.

An exploration of psychological aspects of physical education, athletic sports and recreation. Applications of psychology are made to teaching and learning, coaching, athletic efficiency (motivation, emotional upset, staleness, etc.), and the problem of interpreting physical education and recreation experiences. Means of studying problems of these kinds are evaluated.

P. E. 280. The Scientific Bases of Exercises (3). Prerequisites, Anatomy, Physiology, P. E. 100, P. E. 160, or the equivalent.

A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

P. E. 290. Administrative Direction of Physical Education, Recreation, and Health (3).

This is essentially a problem course in which administrative policies and techniques are analyzed in the light of sound educational practice. Opportunities are provided for students to concentrate their efforts upon their own on-the-job administrative problems.

P. E. 291. Curriculum Construction in Physical Education and Health (3).

A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

PHYSICS

Phys. 1. Elements of Physics: Mechanics, Heat, and Sound (3). Two lectures, and one recitation a week. The first half of a survey course in general physics. *This course is for the general student and does not satisfy the requirement of the professional schools.* Successful passing prerequisite of the qualifying examination in elementary mathematics. Lecture demonstration fee, \$3.00.

Phys. 2. Elements of Physics: Magnetism, Electricity, and Optics (3). The second half of a survey course in general physics. *This course is for the general student and does not satisfy the requirements of the professional schools.* Prequisite, Phys. 1. Lecture demonstration fee, \$3.00.

Phys. 102. Optics (3). Three lectures a week. Prerequisites, Phys. 11 or 21 and Math. 21.

Phys. 104, 105. Electricity and Magnetism (3, 3). Prerequisites, Phys. 11 or 21 and Math. 21.

Phys. 106, 107. Theoretical Mechanics (3, 3). Prerequisites, Phys. 51 or consent of instructor.

Phys. 108. Physics of Electron Tubes (3). Three lectures a week. Prerequisite, Phys. 104. Must be taken previously or concurrently.

Phys. 109. Electronic Circuits (4). Four lectures a week. Prerequisite: Phys. 105 must be taken previously or concurrently.

Phys. 114, 115. Introduction to Biophysics (2, 2). Two lectures a week; Prerequisites: intermediate Phys. and Calculus.

Phys. 116, 117. Fundamental Hydrodynamics (3, 3). Three lectures a week. Prerequisites, Phys. 107 and Math. 21.

Phys. 118. Introduction to Modern Physics (3). Three lectures a week. Prerequisite, Math. 21 and Phys. 11 or 21.

Phys. 119. Modern Physics (3). Prerequisite, Phys. 118.

Phys. 120. Nuclear Physics (4). Prerequisite, Phys. 118, or equivalent.

Phys. 121. Neutron Physics and Fission Reactors (4). Four lectures a week. Prerequisite, Phys. 120.

Phys. 122. Properties of Matter (4). Four lectures per week. Prerequisite, Physics 118 or equivalent.

Phys. 126. Kinetic Theory of Gases (3). Prerequisites, Phys. 107 and Math. 21, or equivalent.

Phys. 130, 131. Basic Concepts of Physics (2, 2). Two lectures a week. Prerequisite, Junior standing. Lecture demonstration fee, \$2.00 per semester.

A primarily descriptive course intended mainly for those students in the liberal arts who have not had any other course in physics. This course does not satisfy the requirements of professional schools nor serve as a prerequisite or substitute for other physics courses. The main emphasis in the course will be on the concepts of physics, their evolution and their relation to other branches of human endeavor.

Phys. 200, 201. Introduction to Theoretical Physics (6, 6). Primarily for

students planning to do graduate work. Prerequisite, advanced standing in physics and mathematics.

Phys. 204. Electrodynamics (4). Prerequisite, Phys. 201.

Phys. 208. Thermodynamics (3). Prerequisite, Phys. 201, or equivalent.

Phys. 210. Statistical Mechanics (3). Prerequisites, Phys. 112 and 201.

Phys. 212, 213. Introduction to Quantum Mechanics (4, 4). Prerequisite, Phys. 201.

Phys. 214. Theory of Atomic Spectra (3). Three lectures a week. Prerequisite, Physics 201.

Phys. 215. Theory of Molecular Spectra (3). Three lectures a week. Prerequisite, Physics 214.

Phys. 222, 223. Boundary-Value Problems of Theoretical Physics (2, 2). Prerequisite, Phys. 201.

Phys. 224, 225. Supersonic Aerodynamics and Compressible Flow (2, 2). Prerequisite Phys. 201.

Phys. 230. Seminar (1).

Seminars on various topics in advanced physics are held each semester, with the contents varied each year. One semester hour of credit for each seminar each semester.

Phys. 234, 235. Theoretical Nuclear Physics (3, 3). Prerequisite, Phys. 213.

Phys. 236. Theory of Relativity (3). Prerequisite, Phys. 200.

Phys. 237. Relativistic Quantum Mechanics (3). Three lectures per week. Prerequisite, Phys. 213.

Phys. 238. Quantum Theory—selected topics (3). Prerequisites, Phys. 212 and 236.

Phys. 240, 241. Theory of Sound and Vibrations (3, 3). Prerequisite, Phys. 201.

Phys. 242, 243. Theory of Solids (2, 2). Prerequisite, Phys. 213.

Phys. 248, 249. Special Topics in Modern Physics (2, 2). Two lectures per week. Prerequisite, calculus and consent of instructor.

Phys. 250. Research. (Credit according to work done). Laboratory fee, \$10.00 per credit hour. Prerequisite, approved application for admission to candidacy or special permission of the Physics Department.

PSYCHOLOGY

Psych. 1. Introduction to Psychology (3).

A basic introductory course intended to bring the student into contact with the major problems confronting psychology and the more important attempts at their solution.

Psych. 2. Applied Psychology (3). Prerequisite, Psych. 1.

Application of research methods to basic human problems in business and industry, in the professions, and in other practical concerns of everyday life.

Psych. 5. Mental Hygiene (3). Prerequisite, Psych. 1.

Introduces the student to the psychology of human personality and adjustment with a view toward increasing self-understanding and developing an appreciation of the mental health movement and each individual's stake in it.

Psych. 21. Social Psychology (3). Prerequisite, Psych. 1.

Psychological study of human behavior in social situations; influence of others on individual behavior, social conflict and individual adjustment, communication and its influences on normal social activity.

Psych. 25. Child Psychology (3). Prerequisite, Psych. 1.

Behavioral analysis of normal development and normal socialization of the growing child.

Psych. 106. Statistical Methods in Psychology (3). Prerequisites, Psych. 1, and Math. 1, 5 or 10, or equivalent.

A basic introduction to quantitative methods used in psychological research; measures of central tendency, of spread, and of correlation. Majors in Psychology must take this course in the junior year.

Psych. 110. Educational Psychology (3). Prerequisite, Psych. 1.

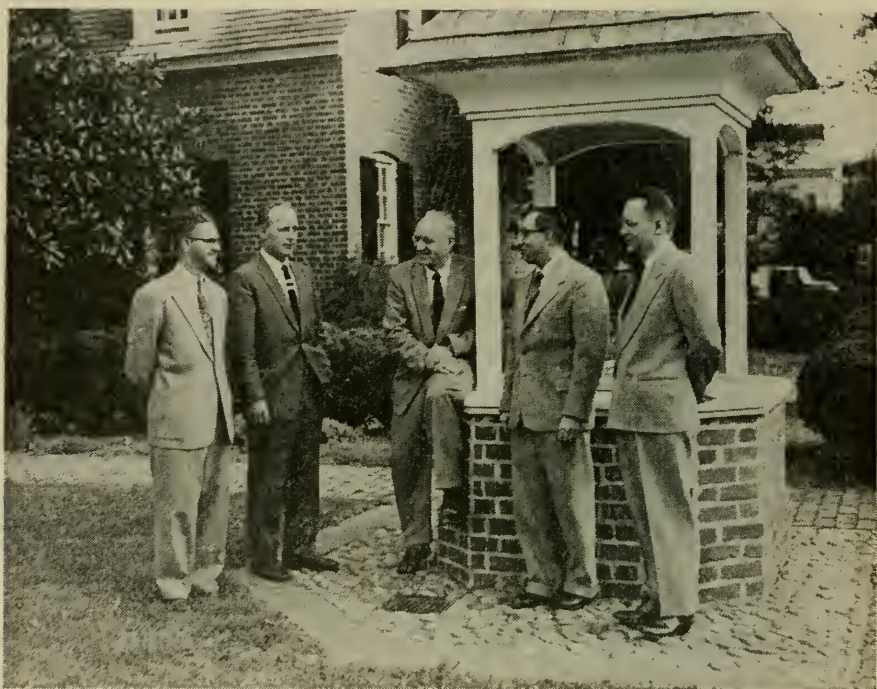
Researches on fundamental psychological problems encountered in education; measurement and significance of individual differences, learning, motivation, transfer of training.

Psych. 128. Human Motivation (3). Prerequisite, Psych. 121.

Review of research literature dealing with determinants of human performance, together with consideration of the major theoretical contributions in this area.

Psych. 131. Abnormal Psychology (3). Prerequisites, three courses in Psychology.

The nature, diagnosis, etiology, and treatment of mental disorders.



EUROPEAN-BOUND ACADEMIC HEADS

Gathered before a conference which was held in historic Rossborough Inn at College Park, Associate Dean Stanley J. Drazek (second from right) chats with heads of departments who are about to leave for a tour of Maryland's European facilities. Others in the picture include (l. to r.) Dr. Elmer Plischke, Professor and Head, Department of Government and Politics; Professor Warren Strausbaugh, Professor and Head, Department of Speech; Dr. Harold C. Hoffsommer, Professor and Head, Department of Sociology; and Dr. Dudley Dillard, Professor and Head, Department of Economics.

The group visited Europe in November, 1956, together with several other department heads not shown. Through means of these visits, department heads at the home campus keep in close liaison with teachers and students in Europe. In this way, academic standards are maintained.

Psych. 161. Industrial Psychology (3). Prerequisite, Psych. 1.

A survey course, intended for those who plan to enter some phase of personnel work, but who do not plan to undertake graduate study.

RECREATION

In addition to the Recreation courses listed below consult the College of Physical Education, Recreation and Health catalog of graduate level courses in the Recreation field.

For Advanced Undergraduates and Graduates**Rec. 170. General Fundamentals of Recreation (3).**

This course is designed for students not majoring in recreation who wish to develop some understanding of the place, importance and potentialities of recreation in modern life. Included will be limited study of the areas of philosophy, program planning, personality and leadership techniques, organization and administration, and interrelationships with other fields.

For Graduates**Rec. 288. Special Problems in Physical Education, Recreation and Health.**

Master or Doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

SOCIOLOGY

Sociology 1 or Sociology 2 is a prerequisite for all more advanced Sociology courses (except Sociology 5).

Soc. 1. Sociology of American Life (3).

Sociological analysis of the American social structure; metropolitan, small town, and rural communities; population distribution, composition and change; social organization.

Soc. 2. Principles of Sociology (3).

The basic forms of human association and interaction; social processes; institutions; culture; human nature and personality.

Soc. 5. Anthropology (3).

Introduction to anthropology; origins of man; development and transmission of culture; backgrounds of human institutions.

Soc. 52. Criminology (3).

Criminal behavior and the methods of its study; causation; topologies of criminal acts and offenders; punishment, correction, and incapacitation; prevention of crime.

Soc. 64. Courtship and Marriage (3).

A sociological study of courtship and marriage including considerations of physiolog-

ical and psychological factors. Inter-cultural comparisons and practical considerations. Designed primarily for students in the lower division.

Soc. 105. Cultural Anthropology (3).

A survey of the simpler cultures of the world with attention to historical processes and the application of anthropological theory to the modern situation.

Soc. 112. Rural-Urban Relations (3).

The ecology of population and the forces for making change in rural and urban life; migration, decentralization and regionalism as methods of studying individual and national issues. Applied field problems.

Soc. 113. The Rural Community (3).

A detailed study of rural life with emphasis on levels of living, the family, school, and church and organizational activities in the fields of health, recreation, welfare, and planning.

Soc. 114. The City (3).

The rise of urban civilization and metropolitan regions; ecological process and structure; the city as a center of dominance; social problems, control, and planning.

Soc. 115. Industrial Sociology (3).

The sociology of human relations in American industry and business. Complex industrial and business organizations as social systems. Social relationships within and between industry, business, community, and society.

Soc. 116. Military Sociology (3).

The sociology of military life. Social change and the growth of military institutions. Complex formal military organizations. Military organizations as social systems. Military Service as an occupation or profession. Career patterns, problems and satisfactions. Relations between military institutions, civilian communities and society.

Soc. 118. Community Organization (3).

Community organization and its relation to social welfare; analysis of community needs and resources; health, housing, recreation; community centers; neighborhood projects.

Soc. 121. Population (3).

Population distribution and growth in the United States and the world; population problems and policies.

Soc. 122. Population (3).

Trends in fertility and mortality, migrations, population estimates and the resulting problems and policies.

Soc. 123. Ethnic Minorities (3).

Basic social processes in the relations of ethnic groups within the state; immigration groups and the Negro in the United States; ethnic minorities in Europe.

Soc. 141. Sociology of Personality (3).

Development of human nature and personality in contemporary social life; processes of socialization; attitudes, individual differences, and social behavior.

Soc. 144. Collective Behavior (3).

Social interaction in mass behavior; communication processes; structure and functioning of crowds, strikes, audiences, mass movements, and the public.

Soc. 145. Social Control (3).

Forms, mechanisms, and techniques of group influence on human behavior; problems of social control in contemporary society.

Soc. 147. Sociology of Law (3).

Law as a form of social control; interrelation between legal and other conduct norms as to their content, sanctions and methods of securing conformity; law as an integral part of the culture of the group; factors and processes operative in the formation of legal norms as determinants of human behavior.

Soc. 153. Juvenile Delinquency (3).

Juvenile delinquency in relation to the general problem of crime; analysis of factors underlying juvenile delinquency; treatment and prevention.

Soc. 154. Crime and Delinquency Prevention (3).

Mobilization of community resources for the prevention of crime and delinquency; area programs and projects.

Soc. 156. Institutional Treatment of Criminals and Delinquents (3).

Organization and functions of penal and correctional institutions for adults and juveniles.

Soc. 164. The Family and Society (3).

Study of the family as a social institution; its biological and cultural foundations. historic development, changing structure and function; the interactions of marriage and parenthood, disorganizing and reorganizing factors in present-day trends. Open to upper division students.

Soc. 171. Family and Child Welfare (3).

Programs of family and child welfare agencies; social services to families and children; child placement; foster families.

Soc. 174. Public Welfare (3).

Development and organization of the public welfare movement in the United States; social legislation; interrelations of federal, state, and local agencies and institutions.

Soc. 186. Sociological Theory (3).

Development of the science of sociology; historical backgrounds; recent theories of society.

Soc. 201. Methods of Social Research (3).

Selection and formulation of research projects; methods and techniques of sociological investigation and analysis. Required of graduate majors in sociology.

Soc. 224. Race and Culture (3).

Race and culture in contemporary society; mobility and the social effects of race and culture contacts and intermixture.

Soc. 255. Seminar: Juvenile Delinquency (3).

Selected problems in the field of juvenile delinquency.

Soc. 256. Crime and Delinquency as a Community Problem (3).

An intensive study of selected problems in adult crime and juvenile delinquency in Maryland.

Soc. 262. Family Studies (3).

Case studies of family situations; statistical studies of family trends; methods of investigation and analysis.

SPEECH AND DRAMATIC ART

Speech 1, 2. Public Speaking (22, 2). Prerequisite for advanced speech courses. Speech I prerequisite for Speech II.

The preparation and delivery of short original speeches; outside readings; reports, etc. It is recommended that this course be taken during the freshman year. Laboratory fee, \$1.00 for each course.

Speech 4. Voice and Diction (3).

Emphasis upon the improvement of voice, articulation, and phonation. May be taken concurrently with Speech 1, 2.

Speech 10. Group Discussion (2).

A study of the principles, methods and types of discussion and their application in the discussion of contemporary problems.

Speech 103, 104. Speech Composition and Rhetoric (3, 3).

A study of rhetorical principles and models of speech composition in conjunction with the preparation and presentation of specific forms of public address. Speech 103 is prerequisite to Speech 104.

Speech 105. Speech-Handicapped School Children (3). Admission by consent of instructor.

The occurrence, identification and treatment of speech handicaps in the classroom. An introduction to speech pathology. Laboratory fee, \$1.00.

Speech 106. Clinical Practice (1 to 5 credits, up to 9). Prerequisite Speech 105.

Clinical practice in various methods of corrective procedures with various types of speech cases in the University clinic, veterans hospitals, and the public schools. May be taken for 1-5 credit hours per semester. May be repeated for a total of 9 semester hours credit. Laboratory fee, \$1.00 per hour.

Speech 109. Speech and Language Development of Children (3).

An analysis of normal and abnormal processes of speech and language development in children.

Speech 111. Seminar (3). Required of speech majors.

Present-day speech research.

Speech 112. Phonetics (3).

Training in the recognition and production of the sounds of spoken English, with an analysis of their formation. Practice in transcription. Mastery of the international phonetic alphabet. Laboratory fee, \$3.00.

Speech 120. Speech Pathology (3). Prerequisite, Speech 105.

A continuation of Speech 105, with emphasis on the causes and treatment of organic speech disorders. Laboratory fee, \$3.00.

Speech 126. Semantic Aspects of Speech Behavior (3).

An analysis of speech and language habits from the standpoint of General Semantics.

Speech 127, 128. Military Speech and Commands (2, 2).

Limited to students in the College of Military Science.

Speech 133. Staff Reports, Briefings, and Visual Aids (3).

Limited to students in the College of Military Science. Prerequisite, Speech 104.

Speech 136. Principles of Speech Therapy (3). Prerequisite, Speech 120.

Differential diagnosis of speech and language handicaps and the application of psychological principles of learning, motivation and adjustment in the treatment of speech disorders. Laboratory fee, \$3.00.

Speech 200. Thesis (3-6).

Credit in proportion to work done and results accomplished.

Speech 201. Special Problems Seminar (A through K), (1-3). (6 hours applicable toward M.A. degree).

A. Stuttering; B. Cleft Palate; C. Delayed Speech; D. Articulation; E. Cerebral Palsy; F. Voice; G. Special Problems of the Deaf; H. Foreign Dialect; I. Speech Intelligibility; J. Neurophysiology of Hearing; K. Minor Research Problems.

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“E D U C A T I O N does not mean teaching people what they do not know. It means teaching them to behave as they do not behave. It is not teaching the youth the shapes of the letters and the tricks of numbers, and then leaving them to turn their arithmetic to roguery and their literature to lust. It means, on the contrary, training them into the perfect exercise and kingly continence of their bodies and souls. It is painful, continual and difficult work to be done by kindness, by watching, by warning, by precedent, and by praise, but above all—by example.”—John Ruskin.

“In our country no man is worthy the honored name of statesman, who does not include the highest practicable education of the people in all his plans of administration.”—Horace Mann.

“Promote, then, as an object of primary importance institutions for the general diffusion of knowledge. In proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened.”—George Washington.

“The good education of youth has been esteemed by wise men in all ages as the surest foundation of the happiness both of private families and of commonwealths.”—Benjamin Franklin.

“The whole people must take upon themselves the education of the whole people and be willing to bear the expense of it.”—John Adams.

“If a nation expects to be ignorant and free in a state of civilization, it expects what never was and never will be.”—Thomas Jefferson.

“A popular government without popular information or the means of acquiring it, is but the prologue to a farce or a tragedy, or perhaps both.”

—James Madison

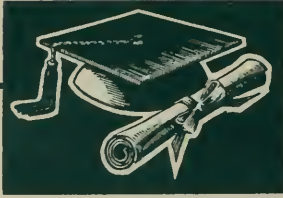
“An educated man is never poor and no gift is more precious than education.”—Abraham Lincoln.

“Without popular education no government which rests on popular action can long endure; the people must be schooled in the knowledge and in the virtues upon which the maintenance and success of free institutions depend.”

—Woodrow Wilson

“We have faith in education as the foundation of democratic government.”

—Franklin D. Roosevelt



SEPARATE CATALOGS

At College Park

Individual catalogs of colleges and schools of the University of Maryland at College Park may be obtained by addressing the Office of University Relations, University of Maryland, College Park, Md.

These catalogs and schools are:

1. General Information
2. College of Agriculture
3. College of Arts and Sciences
4. College of Business and Public Administration
5. College of Education
6. College of Engineering
7. College of Home Economics
8. College of Military Science
9. College of Physical Education, Recreation and Health
10. College of Special and Continuation Studies
11. Summer School
12. Graduate School

At Baltimore

Individual catalogs for the professional schools of the University of Maryland may be obtained by addressing the Deans of the respective schools at the University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland. The professional schools are:

13. School of Dentistry
14. School of Law
15. School of Medicine
16. School of Pharmacy
17. School of Nursing

At Heidelberg

The catalog of the European Program may be obtained by addressing the Dean, College of Special and Continuation Studies, College Park, Maryland.